22/9

LIBRARY
RECEIVED
APR 29 1919
U. S. Department of Agriculture

Rock Products

$2.00 A YEAR CHICAGO APRIL 26, 1919

Regardless of Size or Condition

Regardless of size or condition of the plant, Traylor "Bulldog" Jaw and Gyratory Crushers and Non-Corrugating Crushing Rolls produce results. They're built to overcome adverse conditions. Strong, rugged, and scientifically efficient.

Traylor "Bull Dog" Gyratory Crushers

always make good because of their remarkable construction: The shaft is much shorter and 100 per cent stronger than other gyratory shafts. The eccentric is both longer and of greater diameter than others. The lubricating system is positive force feed, insuring perfect lubrication of the eccentric at all times. **Write for the Rest of the Reasons.**

TRAYLOR ENGINEERING & MFG. CO., Allentown, Pa.

NEW YORK 30 Church St. | CHICAGO Fisher Bldg. | LOS ANGELES Citizens Bank Bldg. | SPOKANE Mohawk Block

for 5 years the elements tried to destroy it—but today it is as good as new

A Keystone Kiln has stood—with top uncovered—since 1914 at a deserted quarry of the Montgomery Lime Company in Houchins, Va.

Today it is being moved sixty miles to a new location by the Kimbalton Lime Co. It is as good as new!

So satisfactory was its performance during the nine years of actual use that the Kimbalton Lime Co. has ordered a sister kiln to meet increased-production plans.

Keystone Kilns

Here you have proof of singular durability and working merit. And note that the Keystone can be moved. This can be done with no other kiln.

234 Kilns in Use to Date

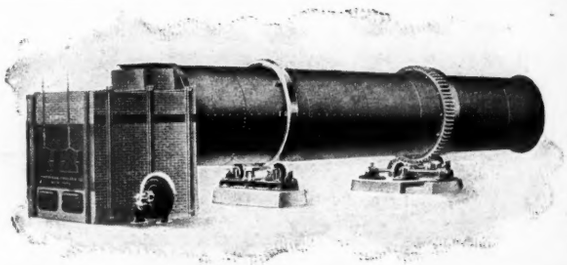
Steacy-Schmidt Manufacturing Co.
York, Penna.

"PENNSYLVANIA" Hammer Crushers

For Crushing and Pulverizing Lime, Limestone, Gypsum, Marl, Shale, Etc. Main Frame of Steel, "Ball and Socket" Self Aligning Bearings; forged Steel Shaft; Steel Wear Liners; Cage adjustable by hand wheel while Crusher is running. No other hammer Crusher has such a big Safety Factor.

PATENTED

Pennsylvania Crusher Company
New York PHILADELPHIA Pittsburgh



DRYERS

AMERICAN PROCESS CO. 68 Williams Street NEW YORK CITY

ATTENTION

Cement Manufacturers and Supply Dealers

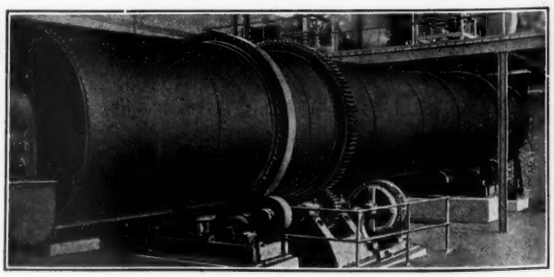
If you will examine your cement that was packed in Jaite Bags over the winter months you will find the cement in better condition than cement packed in other paper or cotton bags.

Ours Excludes the Moisture

THE JAITE CO.
JAITE, OHIO
Sole Manufacturers

Ruggles-Coles Dryers

for coal, clays, sand, stone, etc. They will burn less fuel than any other type and with their low power and repair costs are most economical to operate.



Built to Dry at the Lowest Ultimate Cost

Ruggles-Coles Engineering Co.
McCormick Building Chicago **50 Church Street New York**

WORKS: YORK, PENNSYLVANIA

PRESTON K. YATES

Designer and Construction Engineer

Of Stone Crushing Plants, Conveying and Storage Systems, Quarry Operations, Rotary Lime Kilns, etc.

120 Broadway . . . . New York

Lots of Pictures

26 BIG ISSUES for $2

Covers

completely the interests of producers of Lime, Cement, Gypsum Products, Crushed Stone, Sand, Gravel, Agricultural Limestone, Phosphate, Potash and Glass Sand.

Rock Products

is more than the journal of your industry. It is a SERVICE—definite—authoritative—comprehensive—complete. ¶ Every two weeks it comes to you—an expensive compilation of what has happened during the past fortnight in the way of trade activity—selling, buying, legislation. ¶ And there are articles, too—about interesting quarries, pits, lime plants and so on. ¶ In every issue you will also find incorporated new ideas in the day's work—stunts that will make or save you money.

This Issue or Any Other, Substantiates the Above Review of ROCK PRODUCTS

Market Prices

Not the least of ROCK PRODUCTS' service is the current market quotations. Always up to the minute and divided into localities. This feature alone should induce you to mail the coupon. Do it! Fill in and mail without delay so that you will get the next issue!

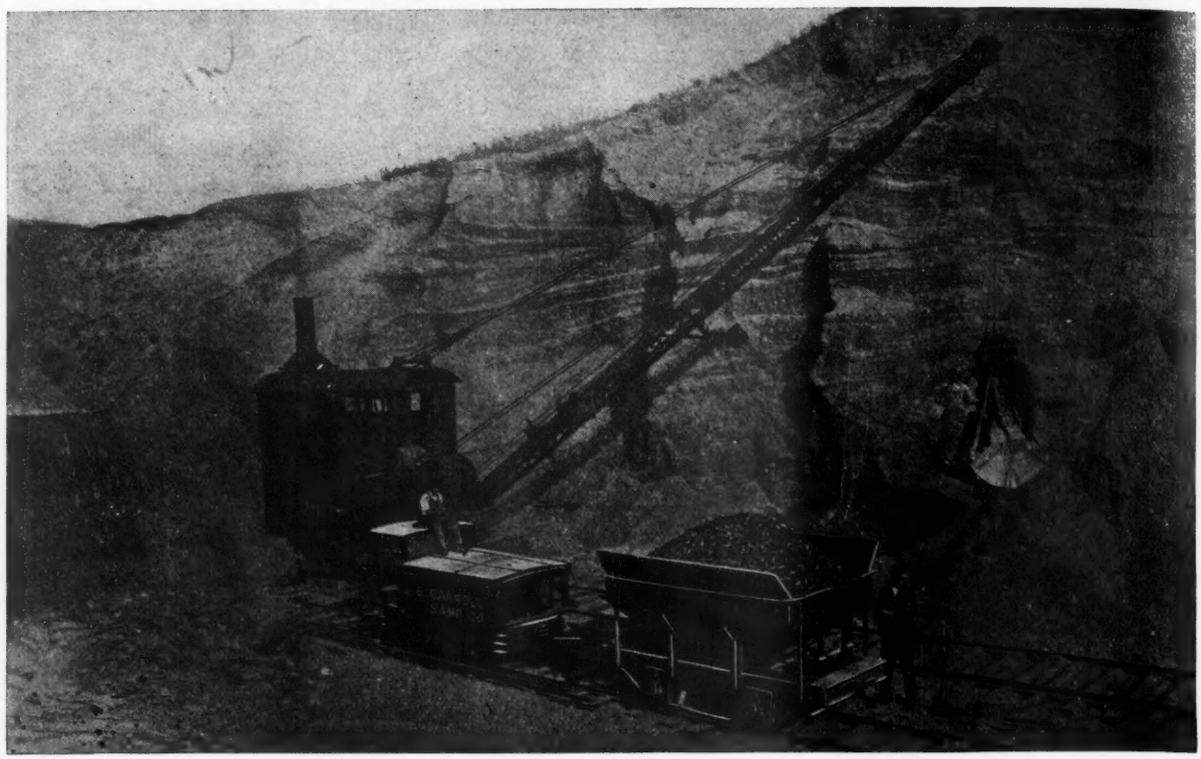
ROCK PRODUCTS is published every other week by Tradepress Publishing Corporation, 542 So. Dearborn St., Chicago. Subscription: $2.00 a year in the United States, $3.00 in Canada. Entered as second class matter July 2, 1907, at the postoffice in Chicago, under Act of March 3, 1879.

ROCK PRODUCTS
542 So. Dearborn St., Chicago

Here is my $2.00 for a full year's subscription to ROCK PRODUCTS.

Name.....

Address.....



PLYMOUTH
Gasoline Locomotives

Let it Boost YOUR Yardage, Too!

One "Plymouth" Gasoline Locomotive owned by the J. E. Carroll Sand Co., Buffalo, N. Y., worked this double advantage for its owners from the very start:

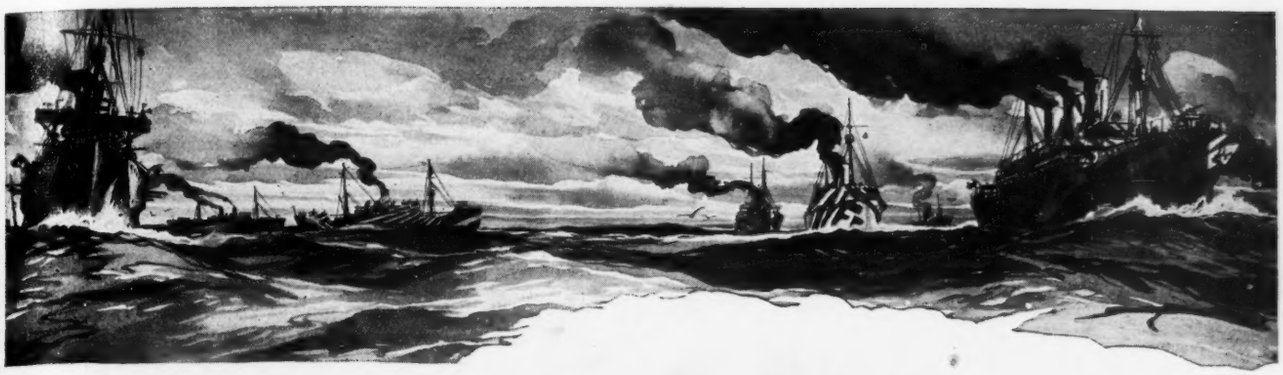
It increased output over 50 per cent, and it enabled the company to produce for considerably less per yard than had been possible before.

"We find the 'Plymouth' operates quickly and efficiently," President J. E. Carroll wrote us after giving it a thorough-going trial.

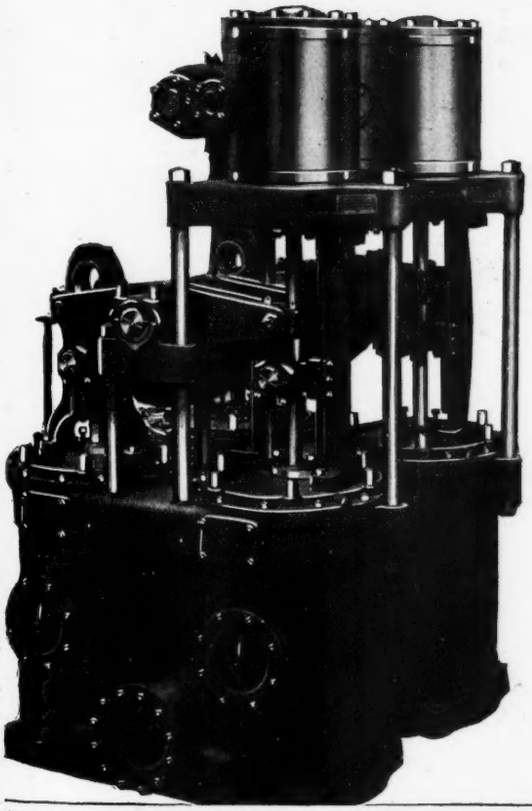
"Plymouth" Gasoline Locomotives are really revolutionizing haulage for sand, gravel, stone and cement companies all over the country. Don't you want to know more about them? Our books contain live, interesting haulage stories—glad to send them with full particulars, if you will write, stating fully the conditions of your own haulage.

THE J. D. FATE COMPANY, 210 Riggs Avenue, PLYMOUTH, OHIO

New York Philadelphia Norfolk Pittsburgh Cleveland Detroit Kansas City Minneapolis Portland



Worthington Team Work in War-time



If a destroyer requires, say 26 pumps, and our Government suddenly orders 150 destroyers; and if to this huge program are added battleships, mine-sweepers, and other war craft, each with full complement of special pumps—how many tools will be left idle, even in the country's largest marine-pump shop? Answer, "Zero."

And if then the Government builds millions of tons of merchant shipping, each ship requiring its boiler-feed pumps, condenser pumps, bilge and general service pumps—to whom can the Government turn? Answer, "Worthington."

For while our Blake & Knowles shop was crowded with war work (ordinarily we make all our marine pumps at Cambridge), we shipped patterns and prints to Holyoke, and our Deane Works stepped into the breach. In normal times Deane specializes on power pumps; but over 300 beam air pumps (illustrated), and hundreds of other marine types, were made at Holyoke for the Emergency Fleet.

The noteworthy point is that our Deane Works turned out these pumps, of a pattern new to them, not merely in good time but actually at a rate and of a quality of workmanship which fairly equalled the old-established standards of our Blake-Knowles Works. It was an exhibition of corporation team-work that adds fresh honors both to "Deane of Holyoke" and to Worthington.

Worthington Pump and Machinery Corporation
***Executive Offices:* 115 Broadway, New York City**
Branch Offices in 24 Large Cities

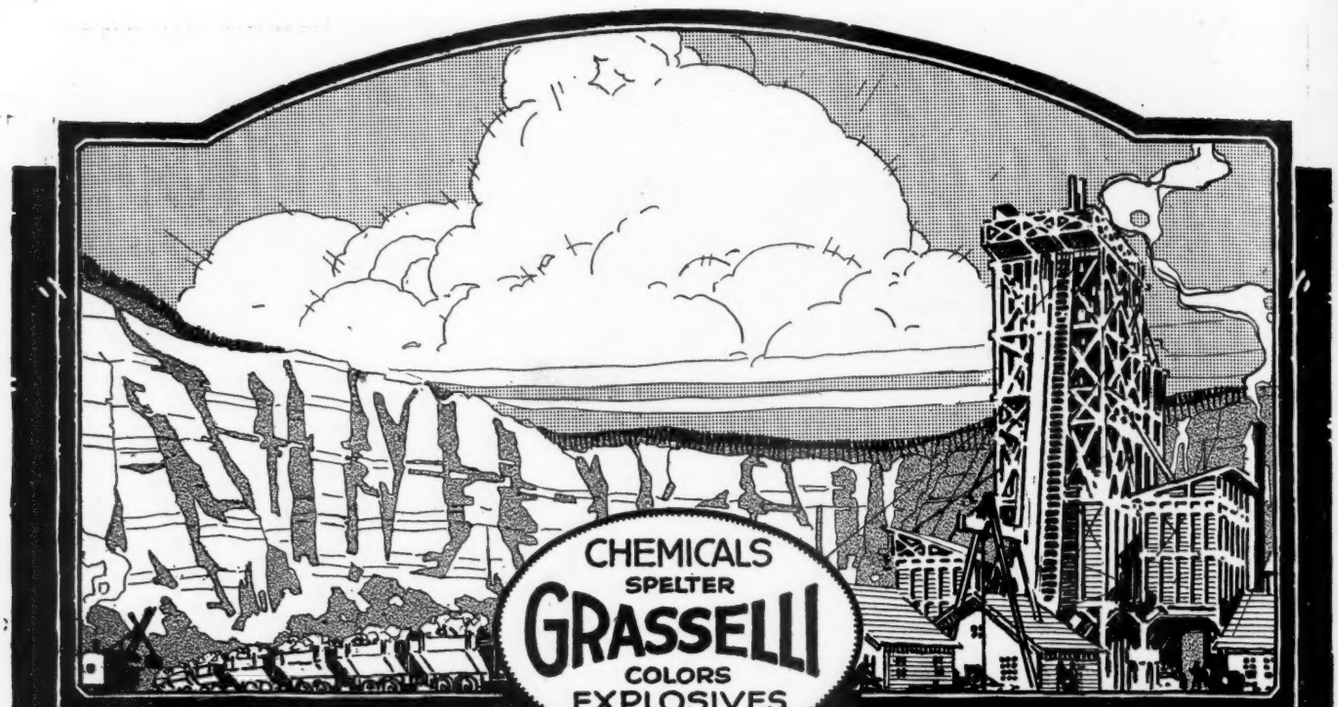
PRODUCTS FOR MILL AND QUARRY
Air Compressors, Gyratory and Jaw Crushers,
Cement Making Machinery, Screens, Ball Mills
Special Bulletins on Request

PUMPS—COMPRESSORS—CONDENSERS—METERS——OIL & GAS ENGINES—MINING MACHINERY

WORTHINGTON

Worthington Works, Harrison, N.J.
Blake & Knowles Works, East Cambridge, Mass.
Deane Works, Holyoke, Mass.
Hazleton Works, Hazleton, Pa.
Snow-Holly Works, Buffalo, N.Y.
Laidlaw Works, Cincinnati, Ohio.
Power & Mining Works, Cudahy, Wis.
Gas Engine Works, Cudahy, Wis.

Cooperation is the thing—please mention ROCK PRODUCTS



GRASSELLI EXPLOSIVES

The use of efficient explosives, together with efficient man and mechanical power, makes the success of the stone industry a certainty.

Pit and Quarry operators today realize that "Grasselli" quality explosives are the most efficient explosives science can produce.

Backed by years of practical experience in directing huge blasting jobs, the Grasselli Powder Company stands ready to give you valuable assistance in the form of personal service, which will help you to increase production and cut down operating expenses.

Let one of our engineering experts work with you in solving your blasting problems.

Your request for further information regarding "Grasselli" Service will receive prompt and courteous attention.

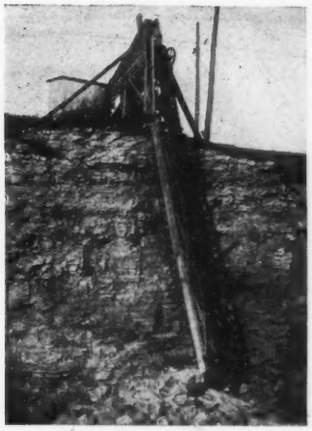
The Grasselli Powder Company

Cleveland, Ohio

Cooperation is the thing—please mention ROCK PRODUCTS

Webster Machinery

For Elevating and Conveying in Quarries



Webster Bucket Elevator from Quarry to Cars

Sand and Gravel Plants and Wherever There Are Large Operations

Quickly Pays Handsome Profits

Webster Machinery will help get out more product and will cut the per ton costs of handling.

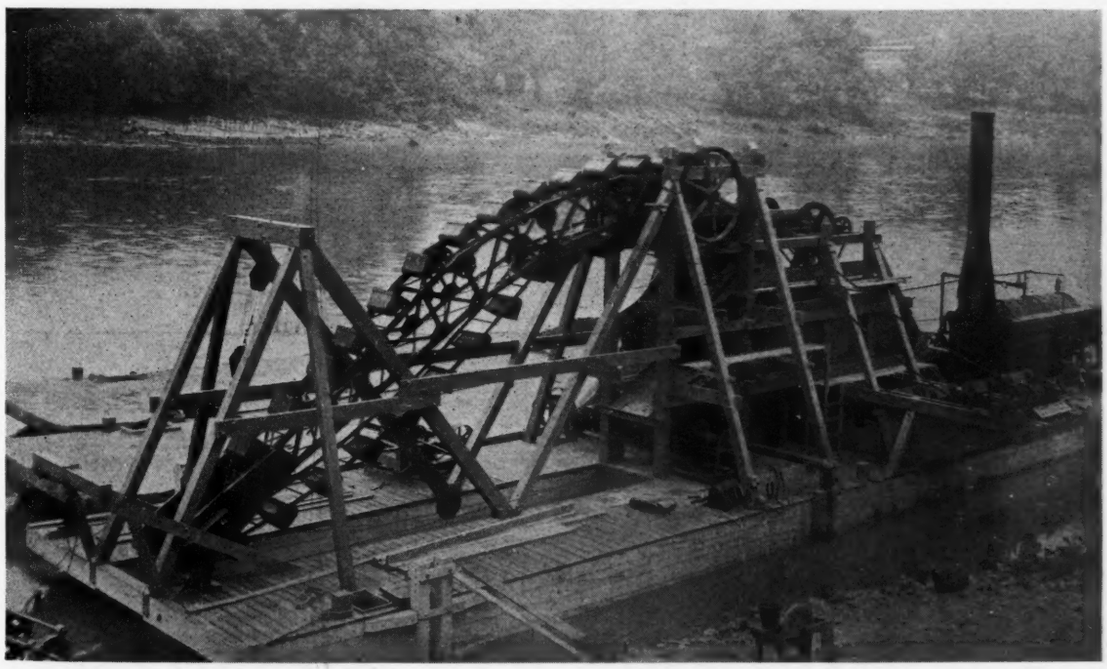
And because it is staunchly built, and designed intelligently for the work to be performed, it gives the user a maximum benefit at a minimum maintenance cost.

Since we build nearly every type of Conveying, Elevating and Power Transmission Machinery, we can supply the kind best suited to each specific need.

Catalog and Engineering Recommendations upon Request

THE WEBSTER M'F'G COMPANY, Tiffin, Ohio

New York, 90 West St. Boston, 141 Milk St. Chicago, McCormick Bldg.

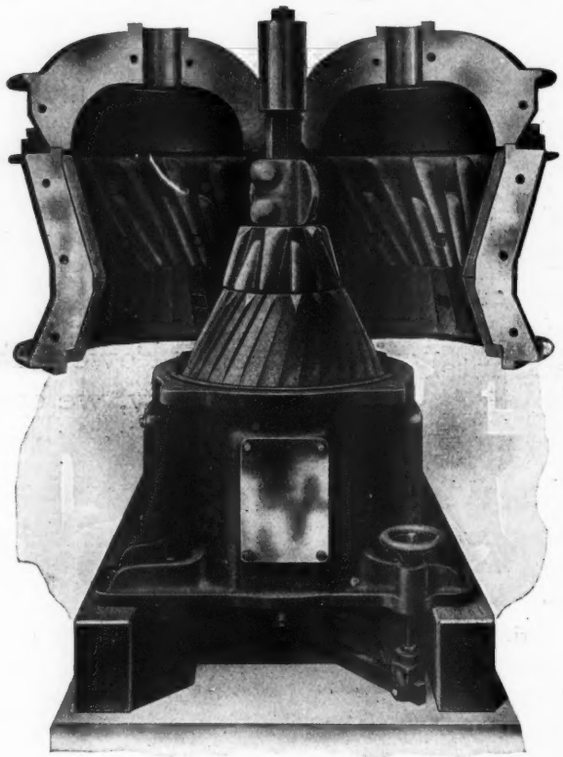


Webster Digging and Screening Plant on Dredge Boat

"ONE MAN – ONE MINUTE"

STURTEVANT "OPEN-DOOR" MACHINERY

"Open-Door" Rotary Fine Crusher



PATENTED

FOR THE REDUCTION OF SOFT AND MODERATELY HARD MATERIALS FROM LARGE PIECES TO 1/2 AND 1/4 INCHES

Unfasten the bolts, throw open the door and get at all wearing parts. One man can open the door in a very few minutes.

SHUT-DOWNS ARE COSTLY—TIME IS MONEY

"Open-Door" machinery pays because it operates more continuously than any other, therefore production is greater and less time and labor are necessary in case of obstruction or repairs.

BUILT IN FIVE SIZES

Send for Catalogs of Sturtevant "Open-Door" Machines for Crushing, Grinding, Screening, Elevating, Conveying, Weighing and Mixing

STURTEVANT MILL CO., BOSTON MASS.

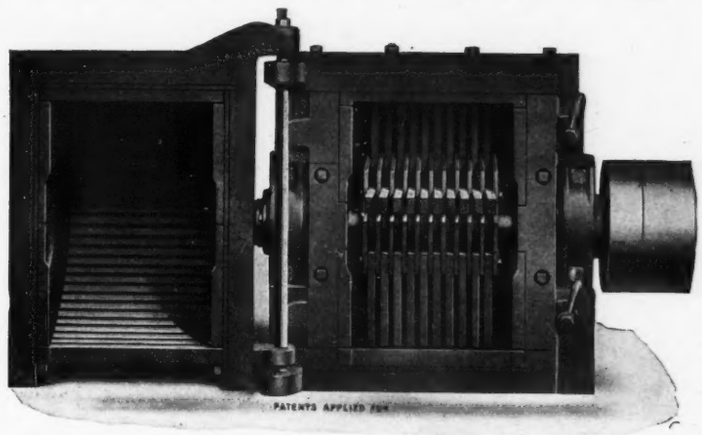
HARRISON SQUARE

You will get entire satisfaction if you mention ROCK PRODUCTS

"ONE MAN – ONE MINUTE"

STURTEVANT "OPEN-DOOR" MACHINERY

"Open-Door" Swing-Sledge Mill



PATENTED

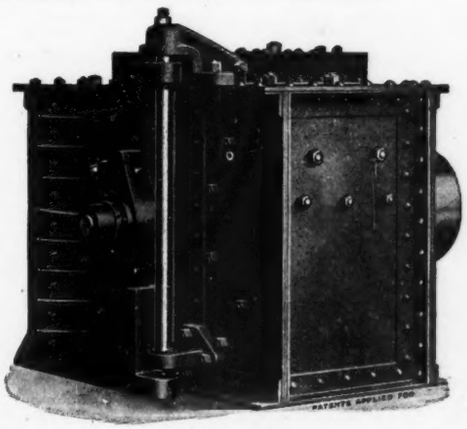
FOR PULVERIZING SOFT AND MODERATELY HARD MATERIALS

"ONE-MAN IN ONE-MINUTE" opens this massive door, through which every part may be reached for inspection, adjustment, repair, or for the removal of iron or other uncrushable substances.

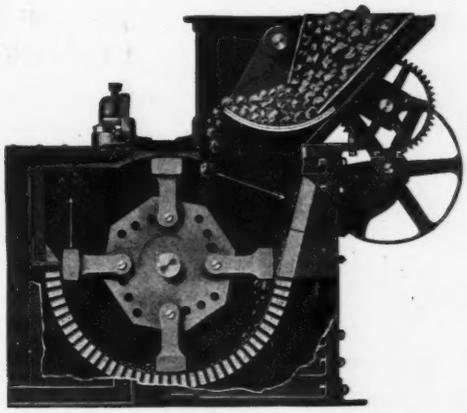
High-Speed Pulverizers produce enormous outputs if closely adjusted and kept in repair, otherwise production falls off rapidly.

To repair other mills of this type is a long and difficult undertaking and therefore is generally neglected, and the mills seldom give rated capacities.

There is no excuse for neglect with "OPEN-DOOR" mills, and therefore their outputs are always at maximum.



PATENTED



PATENTED

STURTEVANT MILL CO., BOSTON MASS.

HARRISON SQUARE

Prompt attention will be given your inquiry if you mention ROCK PRODUCTS

Gyratory Rock Crushers
Stone Elevators
Stone Screens
Stone Spreaders
Motor Tandem Rollers
Motor Macadem Rollers
Portable Stone Bins
Elevating Graders
Road Scarifiers
Street Sprinklers
Street Sweepers
Dump Wagons
Horse Drawn Rollers

AUSTIN
Gyratory Rock Crushers

Reconstruction abroad means more construction at home.

More than ever before, American contractors, builders and quarry-operators are in need of rock-crushing and rock-handling equipment that can be depended upon to deliver larger outputs and that will work steadily and efficiently without interruptions and breakdowns.

Austin Gyratory Crushers—ranging in capacity from 50 to 5,000 tons per day—are guaranteed to render continuous service under the most severe operating conditions. Their convenient adjustment means an easy, speedy change in the size of the product; their large output cuts down tonnage costs because they work steadily over a wide range of material.

Write today for catalog, describing and illustrating **Austin** Crushers, Elevators, Hoists, Cars, Screens, Bins, Stone Spreading Wagons and all types of Road Building and Maintenance Equipment.

Our engineering experts will be glad to help you solve your problems and advise you as to the machinery best suited to your needs.

During the War the United States and Allied Governments purchased
Over 700 Austin Motor Rollers
More than ten times their combined purchases of all other rollers.
And at Higher Prices. **WHY?**

Austin Manufacturing Co.
CHICAGO
New York San Francisco

Prompt attention will be given your inquiry if you mention ROCK PRODUCTS

5,000 Pounds of

AETNA

L. F. Gelatin Dynamite

Blasted

60,000 Tons

of Hardest Trap Rock

It happened in the quarry of the New Haven Trap Rock Co.

Thirty-eight 28-ft. horizontal holes were drilled ten feet apart, and twelve vertical (8-in. diameter) well-drill holes were placed twenty-five feet apart. Sixty per cent strength Aetna L. F. Gelatin went into these.

B-o-o-o-m-m!!!

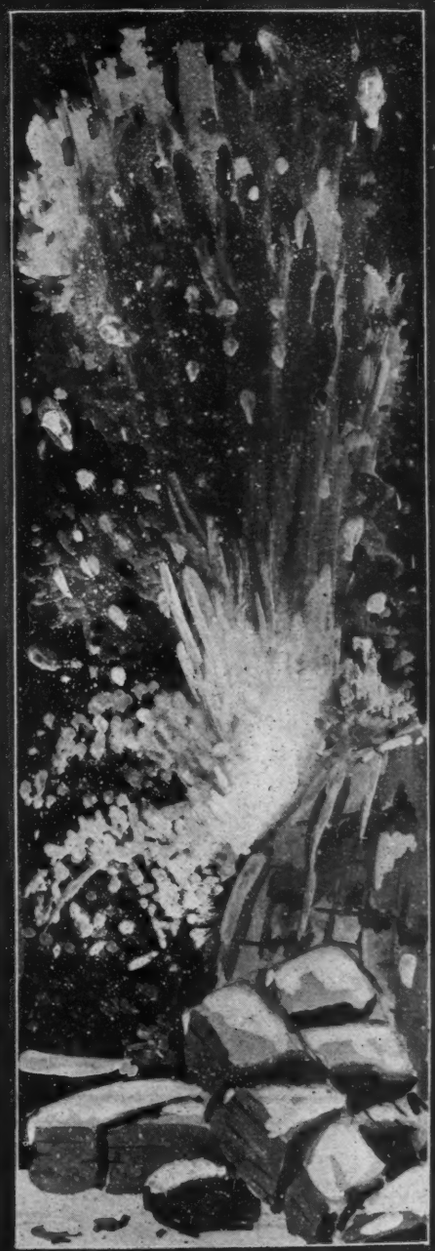
Up the rock was lifted, and down to the bottom it fell in a beautiful mass of well-broken sizes. Then the steam shovels began scooping it up in short order.

It's easy—if you use Aetna!

Always full strength—Always the same—"It does the work!"

Aetna Explosives Company
Incorporated
NEW YORK CITY

Birmingham, Ala.
Buffalo, N. Y.
Chicago, Ill.
Denver, Colo.
Duluth, Minn.
Louisville, Ky.
New Orleans, La
Norristown, Pa.
Pittsburgh, Pa.
Pottsville, Pa.
Roanoke, Va.
St. Louis, Mo.
Wilkes Barre, Pa.



The Demand of the Times:
RESULTS! PROVEN EFFICIENCY!

Because a vast amount of construction work held up for years by the Big War has suddenly been released upon the engineering and contracting field, the imperative necessity is for thorough efficiency and thorough reliability in all equipment---for A No. 1, twenty-four-hour-a-day Results!

The Symons Disc Crusher Stands Upon a Long-Established Record of Achievement

Road work, new and repair, in every state in the Union, will create a far-reaching demand for such equipment. Railway, public and private building and construction, and new projects running into millions of dollars, will be let out. The volume of this work requires concentrated efficiency, to meet and handle it successfully.

The Symons Disc Crusher is not only highly successful in its own field—which was originally secondary crushing—but it is also doing excellent work as an initial breaker for hard-heads and gravel.

The Symons **makes play of its work.** It should have a place in every modern plant. Remember—its upkeep is scarcely "in sight," and its **dependability** is supreme.

Write for full illustrated literature

Chalmers & Williams

1425 Arnold Street **Chicago Heights, Ill.**

Record of a 48-inch Crusher in the field

Material crushed, Limestone.

Length of time operated, 3 years.

Size of feed, 4".

Size of product, 1½".

Horsepower used, 65.

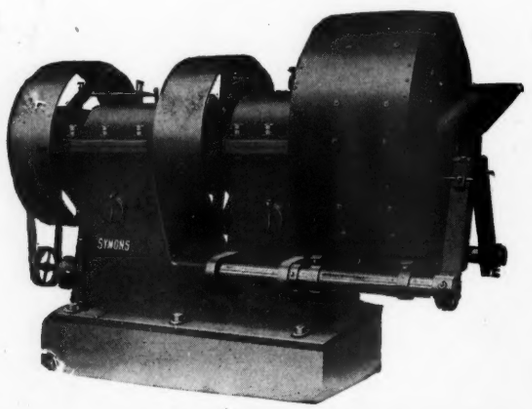
Tons per hour, 80 to 100.

Tons crushed per set of discs, 750,000.

A 6" feed can be handled just as effectively.

No lost time on account of breakage.

We also build them in 18" and 36" size.



Record of a 24-inch Crusher in the field

Material crushed, Gravel and Hard Heads.

Length of time operated, 2 years.

Size of feed, 2".

Size of product, ½".

Horsepower used, 20.

Tons crushed per hour, 25.

Original crushing discs still in use.

No lost time account breakage.

Superior to Rolls, Jaw or Gyratory Crushers on this class of work.

SYMONS DISC CRUSHER

Saying, "I saw it in ROCK PRODUCTS," will bring quick action

The SAFEST Plant in the United States

No accidents in the plant of the Birmingham Slag Co. It's Allis-Chalmers designed and equipped throughout.

At the same time the production—with a surprisingly small amount of equipment and hands—is 4,000 tons of finest quality slag per day.

IT'S ALLIS-CHALMERS EQUIPPED

—that's why big production—safety for workers—minimum hands and operating cost—are all found under one roof.

When you want to build an up-to-date, sure-fire quarry or gravel plant or when you want to remodel—or replace equipment—let Allis-Chalmers engineers offer their suggestions. This invaluable service is available to every present and prospective plant owner.

ALLIS-CHALMERS MILWAUKEE

Safety!

Here is a view of the Allis-Chalmers motor drive for the screens in the Birmingham Slag Company. No exposed gears. No exposed belt drive.

ALLIS-CHALMERS MFG CO.

MILWAUKEE, WIS., U.S.A.

TELSMITH'S CASE

THE feasibility of the Telsmith pillar-shaft breaker has sometimes been questioned by those not familiar with it. Most of these questions have been advanced in good faith and deserve a frank reply. Therefore this space is devoted, not to sales talk, but to some plain, unvarnished facts in answer to these objections. Here are the most common questions about the Telsmith pillar-shaft breaker:—

Will the Eccentric Bearings Stand Up?

They certainly do. For instance, the Defrain Sand Co., of Philadelphia, has operated a No. 7½ on hard river boulders for three years with only 2½ sets of babbitt. The Thomasville Stone & Lime Co., of Thomasville, Pa., has run a No. 7½ for three years, without renewing the bearings. The National Lime & Stone Company is still running a No. 6, purchased in February, 1916, on the original babbitt. The Charles Warner Company, of Wilmington, Del., has replaced only the inner bearing on a No. 8, shipped in December, 1917. The Liberty Bell mine, at Telluride, Colo., has used only 4½ sets of babbitt since 1913; and the Penn Iron Mining Company, of Vulcan, Mich., has bought only 3 sets of babbitt (in all) for two No. 7½'s, installed in 1915. These are not exceptional cases, but only represent the usual performance of the Telsmith breaker.

But Telsmith Has No Leverage

Correct. With a two-to-one lever shaft, you require a 1-in. eccentric throw to obtain ½-in. crushing movement. The Telsmith eccentric produces the same stroke with only half-inch eccentric throw. Thus, the advantage of leverage is neutralized by the added eccentricity it makes necessary.

Is Telsmith Experimental?

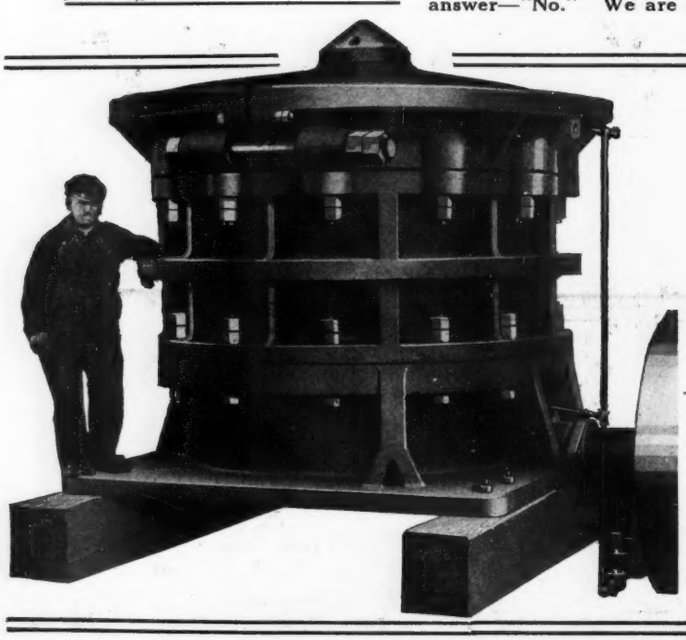
Our first gyratory crushers date back to 1907. We passed the experimental period many years ago. Here are a few users of Telsmith equipment, including some of the largest crusher users in the world: American Smelting and Refining Co., New York City; Phelps-Dodge Corp., New York City; Defrain Sand Co., Philadelphia, Pa.; Charles Warner Co., Wilmington, Del.; Thomas Iron Co., Wharton, N. J.; Thomasville Stone & Lime Co., Thomasville, Pa.; St. Joseph Lead Co., Bonne Terre, Mo.; Casparis Stone Co., Columbus, Ohio; A. H. Wilcox Co., Chicago, Ill.; Chattanooga Coal & Iron Corp., Chattanooga, Tenn. Most of these installations are veterans of many years' service; and the operators would be very much surprised to hear their equipment called "experimental."

Telsmith is Too Light

Telsmith weighs less than a lever-shaft gyratory, due to the shorter shaft; but per inch of height from sills to rim of crown, **it is the heaviest breaker built.** If you don't believe it, take catalog weights and dimensions; put your pencil to work; and you'll find that Telsmith is not only the lightest but also the *heaviest* breaker on the market.

And Now Boys!

Let us have our turn on the aggressive. Have you ever seen any other breaker with a short, rigid bolt-shaft—not only unbreakable itself, but stiffening the whole crusher structure? Have you seen any other breaker with a parallel head movement, exerting the full crushing stroke on the big chunks at the point of entry into the bowl? Do you know of any other breaker with such large eccentric bearings and such perfect lubrication? Is there another crusher with enormous crushing surfaces like Telsmith's? Have you ever seen a breaker built so compactly—so short from sills to rim—so heavy in the bowl—so solid in the back-bone? There's only one possible answer—"No." We are ready to send you our catalog No. 166. Just ask for it.



Smith Engineering Works

3188 Locust Street
Milwaukee, Wis.

545 Old Colony Building.....Chicago. Ill.
30 Church Street.....New York City
930 Oliver Building.....Boston, Mass.
110 W. Park Way, N. S.....Pittsburgh, Pa.
Franklin and Channing Aves.....St. Louis, Mo.
Garfield Building.....Cleveland, Ohio
325 W. Main Street.....Louisville, Ky.
208 N. Third Street.....Columbus, Ohio

Rock Products

TRADEPRESS PUBLISHING CORPORATION
542 SOUTH DEARBORN STREET
CHICAGO

NATHAN C. ROCKWOOD
Editor

T. BIRCHLER
Assistant Editor

A. PERRIN
Manager

C. N. PAUGH
Eastern Representative

SUBSCRIPTION

$2 a year in United States; $3 a year, Canada and foreign. Single copies, 20 cents. Date on wrappers indicates issue with which your subscription expires. In writing to have address changed, give old as well as new address.

Entered as second class matter July 2, 1907, at the Postoffice at Chicago, under act of March 3, 1879.

PUBLISHED EVERY OTHER SATURDAY by the Tradepress Publishing Corporation, 542 South Dearborn St., Chicago, Ill., U. S. A. W. D. Callender, president; T. J. Sullivan, vice-president; George P. Miller, Treasurer; A. Perrin, Secretary.

Vol. XXII, No. 9 April 26, 1919

Printing of this issue, 4,000 copies

Second class entry at U. S. Post Office.

Table of Contents

Editorial	15–16
History of the Railway Freight Rate Case	17–18
Special Loading Equipment for Sand-Storage Yard	19–20
Ohio Quarrymen Discuss Liability Insurance Rates	21
Code of Ethics of Wisconsin Mineral Aggregates Association	22
Standard Quotation Form for Sand, Gravel and Stone	23
Plant Superintendents' Department	24–25
State, Stock-Company, Mutual and Self Insurance Compared	26–27
Vice-Presidents of the National Crushed Stone Association	28
Mt. Carmel Stone-Crushing Plant	29
Physical Effect of Lime on Soils	30
President Carson on Lime Prices	31
Birmingham Slag Co. Plant	32–36
Analysis of the Labor Problem	37–38
Oklahoma Cement Plant Improvements	39
New Machinery and Equipment	40
General Market News from Rock Products Field	41–43
Wholesale Prices, Crushed Stone and Agricultural Limestone	44
Wholesale Prices, Sand, Gravel and Silica Sand	45
Wholesale Prices, Slag, Rock Phosphate, Gypsum	46
General Market News	46–47
Passed by the Screen	48

ALPHABETICAL LIST OF ADVERTISERS

Aero Pulverizer Co. 53
Aetna Explosives Co. 9
Allis-Chalmers Mfg. Co. 11
American Process Co. Inside front cover
American Steel & Wire Co. 53
Arnold, Valentine 49
Atlas Car & Mfg. Co. 58
Audubon Wire Cloth Co. 61
Austin Mfg. Co. 8

Bacon, Earle C., Inc. 54
Ball Engine Co. 59
Bates Valve Bag Co. Inside back cover
Beaumont, R. H., Co. 59
Bradley Pulverizer Co. 60
Browning Co., The 54
Buckbee, J. C. 57
Butterworth & Lowe 59
Byers Machine Co., John F. 53

Carolina Portland Cement Co. 52
Chalmers & Williams 10
Chicago Perforating Co. 53
Classified Advertising 51
Continental Car Co. 58
Cross Eng. Co. 56

Dunning & Boschert 54
Du Pont de Nemours & Co. 65

Ehrsam & Sons Co., J. B. 53
Ensign-Bickford Co. 63
Erie Steam Shovel Co. 59

Fate Co., J. D. 2
Fuller Engineering Co. 53
Fuller-Lehigh Co. 57

Gifford-Wood Co. 57
Grasselli Powder Co. 4
Gruendler Pat. Crusher & Pulv. Co. 55

Hendrick Mfg. Co. 67
Huron & Wyandotte Portland Cement Co. 52

Jaite Co., The Inside front cover
Jeffrey Mfg. Co., The 63
Johnston & Chapman 57

K-B Pulverizer Co., Inc. 59
Kennedy-Van Saun Mfg. & Eng. Co. 60
Kent Mill Co. 64

Leschen & Sons Rope Co., A. Inside back cover
Lewistown Fdy. & Mach. Co. 55
Lima Locomotive Works 65
Link-Belt Co. Back cover
Loomis Mach. Co. 66

Mayer-Hasseldiek Mfg. Co. 54
McLanahan-Stone Machine Co. 55
McMyler Interstate Co. 56
Miscampbell, H. 64

Nortmann-Duffke Foundry Co. 53

Ohio Locomotive Crane Co. 54
Osgood Co., The 56

Pennsylvania Crusher Co. Inside front cover
Phoenix Wire Works 54

Raymond Bros. Impact Pulv. Co. 62
Robins Conveying Belt Co. 54
Robinson Clay Product Co. 52
Ruggles Coles Eng. Co. Inside front cover

Sanderson Cyclone Drill Co. 55
Sauerman Bros. 55
Schaffer Eng. & Equip. Co. 14
Smidth, F. L., & Co. 53
Smith Eng. Works 12
Solvay Process Co. 51
Steacy-Schmidt Mfg. Co. Inside front cover
Stephens-Adamson Mfg. Co. 62
Stroh Steel Hardening Process Co. 61
Sturtevant Mill Co. 6-7
Sullivan Machy. Co. Inside back cover

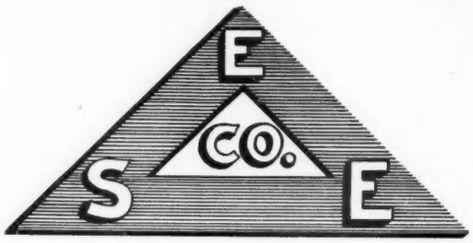
Toepfer & Sons Co., W. 54
Traylor Eng. & Mfg. Co. Front cover

Universal Crusher Co. 56
Used Equipment 50

Vulcan Iron Works 60

Watt Mining Car Wheel Co. 67
Webb City & Carterville Foundry & Mach. Works 55
Webster Mfg. Co. 5
Weller Mfg. Co. 58
White Co. 68
Williams, C. K., & Co. 52
Williams Patent Crusher Co. 58
Worthington Pump & Mach. Co. 3

Yates, Preston K. Inside front cover.



The Schaffer Engineering and Equipment Company

Announces Change of Location

From TIFFIN, OHIO to Peoples Bank Building

Pittsburgh, Pa.

THE demand for Schaffer Engineering Service and Schaffer-Crow Systems and Processes has necessitated the change in location above announced.

This organization is now better prepared to give that personal and particular attention to your operating problems, which in the past has made The Schaffer Engineering and Equipment Company a distinctive organization.

Schaffer Lime Kilns, the Schaffer-Crow Process of Calcination, the Schaffer Hydrator and Schaffer Poidometer are only a few items indicative of ability to be of service to the Rock Products Industry. There are many others equally interesting. When you have occasion to use Schaffer Service in any of its various departments, you secure service backed by the best organization obtainable.

Remember the Change of Location

The Schaffer Engineering & Equipment Company

Peoples Bank Building (4th and Wood Street) Pittsburgh, Pa.

The advertiser wants to know that you saw his ad in ROCK PRODUCTS

Rock Products

Vol. XXII | Chicago, April 26, 1919 | No. 9

Railroad Administration Fails to Decide Freight Rate Case on Merits

Nobody Is Satisfied, but Opinions Differ as to Future Course of Producers

TO AVOID EMBARRASSMENT by reducing the freight rates of any one group of shippers, the Railroad Administration stands to reap a much larger crop of embarrassment by its concession of 10 cents per ton in favor of mineral aggregates purchased by public authorities.

It is going to be embarrassing to carry out because in only a few states do the laws permit public authorities to buy construction material distinct from contracts for the work; and in any event so much red tape will be involved as to discourage a contractor from attempting to take advantage of such a small saving.

The Railroad Administration has discriminated in rates as between one group of consignees and another, which the Interstate Commerce Commission has frequently decided is unlawful. There is no legal precedent whereby a municipal corporation is entitled to lower freight rates than any other corporation.

The Railroad Administration has involved itself in the particular embarrassment it sought to avoid. For instead of frankly declaring the *war freight rates* on building materials unjust as compared with rates on other commodities because they were *imposed to restrict their movement* in the interests of public policy, as has been admitted by the Government itself, the Administration has preferred to consider the rate reduction a contribution out of its profits to encourage public works.

The inevitable result is that road machinery and equipment men and manufacturers of every other construction material entering into public works are clamoring for a like reduction in freight rates on their commodities, and with a very sound reason for doing so. If the Railroad Administration feels called upon to contribute to the construction of public works, why stop at freight rates on mineral aggregates?

Railway Action Explained

Why did the Railroad Administration adopt this course? We have the word of Max Thelen, Director of the Division of Public Service of the Railroad Administration, as follows:*

> At the convention of the Governors and the Mayors, which was held in Washington within the last few days, the Director General made public announcement to the effect that the Railroad Administration is giving consideration to a reduction of the rates on road material used in the construction of public roads and highways and consigned to public authorities.
>
> Of course, I will say frankly it is a little embarrassing to make reductions at a time when our revenues are in the situation in which they are, but it has seemed to me, from the first, that this particular matter is a thing that goes beyond **the question of revenues,** that it is a matter of **tremendous public policy** and that every agency of the Government ought to do its fair share in order to help out in this matter **at this time.**

As to Railway Revenues

The railways are being operated with a growing monthly deficit running into tens of millions of dollars; and incidentally their expenditures for wages are constantly being augmented by concessions to employes.

Letters to ROCK PRODUCTS from mineral aggregate producers all over the country show a just appreciation of the railway revenue problem.

Does Order No. 28 as applied to mineral aggregates increase railway revenues?

We have never seen the slightest evidence that it has, but hundreds of rock products operators throughout the country can furnish irrefutable evidence that it has reduced railway revenue and in many cases annihilated a source of revenue. Does encouraging the use of local side-of-the-road material benefit either the construction industries or the railways? Does parking thousands of empty open-top cars on side-tracks throughout the country add to railway revenue? Does hauling coal and ore cars back to the mines empty when they might go loaded add to railway revenue? Does general stagnation of the construction industry add to railway revenue?

Either Mr. Thelen and the Railroad Administration are barking up the wrong tree, or their real purpose is *not* made public.

*March 11 meeting at New Orleans of the National Industrial Traffic League.

As a Matter of Public Policy

It has been the public policy of the Department of Labor, the Department of Commerce and many other *Government agencies* to do everything possible to promote private construction. Indeed, many forceful statements have emanated from Washington to the effect that the safety of the country depended on the initiative of the private builder.

If the Railroad Administration admits that the freight rates on the basic building materials are so high as to discourage construction by public authorities with millions of cash available and under every moral obligation to start work at once, how much more must they discourage the small private builder with his limited capital and lack of understanding of the situation?

Is Now the Time to Quit?

Rock Products has received but one or two letters in a hundred which fail to state emphatically that the freight rate question has not been decided on its merits and that it will not be until Order No. 28 is revoked or modified. Yet not a few are in favor of calling a halt to the present agitation.

The best reason given for stopping where the rates are now is that further agitation will tend to unstabilize prices and hence delay private construction. Were the agitation to be carried on in the limelight, as it has been, this reason would have much weight; but the issue has lost practically all its news interest (to the popular press) and could not now be carried on with the help of popular publicity even if the producers wanted it.

If it can be proved that the material will not move on present rates, the opportunity still exists of reaching a basis of freight rates that will yield the railways revenue (what the railways want), that will permit mineral aggregate plants to operate (what the producers want), and that will permit builders to use a standard product (what the builders and public want) in place of a make-shift one. In fact it is now a problem of making the long-distance controllers of the railways at Washington see what the real issue is.

To surrender to the Railroad Administration at this time is to acquiesce in rates which no one believes either fair or reasonable, thus giving silent consent and paving the way for further rate increases, which the Administration has constantly in view.

"Screened and Cleaned Aggregates" for Permanent Concrete

One-Third of Aggregate Business Slipping Away from Bona Fide Producers

STATISTICS FOR THE PRODUCTION of cement in this country compiled by the United States Geological Survey for the year 1917 show a domestic consumption of 88,120,000 bbls. Roughly this equals 16,600,000 tons.

Assuming that the average mix is 1:2:4 cement, sand, gravel or stone, and that the proportions are by weight (in practice by volume), we would have the amount of sand consumed in this country for making concrete 33,000,000 tons and the amount of stone and gravel 66,000,000 tons.

This assumption is not far off although of course much cement is used for mortar with no coarse aggregate at all. Likewise a great deal of concrete is still mixed much leaner than 1:2:4. Probably as a general average the figures are approximately correct.

A cubic foot of cement weighs approximately 100 lbs. as does also a cubic foot of loose sand or gravel or crushed stone. So the assumption of mixtures by weights instead of volumes is sufficiently accurate for a rough estimate.

The Geological Survey figures for sand and gravel production for 1917 are divided into various headings none of which is "concrete aggregates." However, taking the Survey's item "building sand," which evidently includes all sand used in construction work, and the item "gravel" which is not defined as railway ballast or otherwise qualified, and we have 25,000,000 tons of sand and 25,000,000 tons of gravel used in 1917 for concrete mixtures. Probably the sand figure should be reduced by at least 2,000,000 tons to allow for plaster sand.

Statistics for crushed stone production in 1917 give the amount of crushed stone used for concrete aggregate as 16,500,000 tons.

If these assumptions and the Geological Survey figures are correct only about two-thirds of the fine aggregate required for concrete work in this country is produced by bona fide sand and gravel companies. The other one-third is evidently largely home-made, side-of-the-road variety. In the coarse aggregates commercial producers evidently have approximately about the same share of the business—namely two-thirds.

The obvious deduction from this evidence is the need of organized agitation for "cleaned and screened aggregates," which is not only necessary to give support to the Portland Cement Association's "Concrete for Permanence" campaign slogan, but very essential if all this vast business of 30,000,000 tons of mineral aggregate per annum now lost is to be secured by legitimate mineral aggregate producers.

History of Struggle for Lower Rates

Secretary of the National Association of Sand and Gravel Producers Gave Washington Officials No Rest Until Decision Was Reached—Governors' and Mayors' Action Prevented General Reduction

THROUGH THE COURTESY of E. Guy Sutton, secretary of the National Association of Sand and Gravel Producers, we are able to give a complete summary of the now famous freight-rate controversy.

As readers of ROCK PRODUCTS will recall, the matter of freight rates on mineral aggregates really came to a head in the proposal of Central District Freight Traffic Committee to put into effect a new mileage scale which would have considerably increased the freight rates on sand, gravel, slag and crushed stone over and above those in effect during the war. The public hearing in Chicago, January 30, on the proposed new rate schedule led to such a storm of protest that public works officials, governors and state legislatures became interested.

Meeting of Governors and Mayors

This was one of the issues which led to the meeting of the governors, state highway officials and mayors in Washington, D. C., on March 4 and 5. All this time the National Associations in the mineral aggregate industries kept up an insistent demand for the repeal of Order No. 28, which had raised freight rates on mineral aggregates 20c. per ton to "restrict their movement" during the war and thus free open-top cars for war munitions. Mr. Sutton's letter to Edward Chambers, director of the Division of Traffic of the Railroad Administration, in the latter part of February (see ROCK PRODUCTS, March 12, p. 17), admirably summarized the contentions of the producers of mineral aggregates.

The congress of mayors and governors, however, asked only for a reduction in freight rates on road materials. Up to that time the Railroad Administration by many published admissions had undoubtedly considered reducing rates on all building materials. The Administration now saw its chance to dodge the real issue by accepting what appeared to it to be the lesser of two evils—the reduction of rates on road materials only—the yielding of little or nothing as a grandstand play for public favor.

The result was a right-about-face from its previous promise to reduce freight rates on building materials by issuing a statement on March 20 to the effect that no general reductions on building materials were contemplated (see ROCK PRODUCTS, March 29, p. 54). At the same time the Administration officials insisted on a price inquiry to determine whether or not mineral aggregate prices could be forced down by threats to withhold a reduction in freight rates.

At this point Mr. Sutton submitted the following brief to the Industrial Board and personally appeared before it in behalf of the sand and gravel producers.

MEMORANDUM

To the Industrial Board of the Department of Commerce:

ON MARCH 20, 1919, Director General Hines of the Railroad Administration made the following announcement:

Official Wording of Freight Rate Reduction

UNITED STATES RAILROAD ADMINISTRATION, WASHINGTON.

WALKER D. HINES, Director General of Railroads, today announced that he has decided, after consultation with the Departments of Agriculture, Commerce and Labor, to reduce the present regularly published tariff rates upon specified road-building materials when for use in Federal, State, County, Parish, Township or Municipal Government road work.

This will authorize all railroads under Federal control to apply rates as shown below on carload shipments of stone (broken, crushed and ground) slag, shells, chatts, cherts, sand and gravel, shipped during the period from May 1 to December 31, 1919, inclusive, when for use in road building or road maintenance, and when consigned to and the freight thereon paid by Federal, State, County, Parish, Township or Municipal government.

The reduced rates to be applied on such material shall be 10c per net ton less than the regularly published tariff rates in effect for the transportation of these materials for commercial uses at the time shipments move; but with a minimum charge of 40c per net ton except that where the regularly published commercial rate is less than 40c per net ton then such regularly published rate shall apply.

These reduced rates may be applied on shipments consigned as outlined above but in care of a contractor, provided the freight is paid by the government, and provided proper certification is made by the government through its properly accredited representative that the shipments are for the use of, and the reduction in the rate will accrue to the government.

The rates authorized are to be applied without publication in tariffs, account government property, but each railroad hauling such material is charged with the duty of seeing that the reduced rates are applied only on bona fide government material where the freight charges saved by the reduction will accrue to the government as indicated above.

Washington, D. C., April 11, 1919.

Various inquiries have been received as to whether the Railroad Administration contemplates a reduction in freight rates on materials used in construction of buildings, and therefore it becomes important to make it clear that no such reductions are in contemplation.

The Railroad Administration is, however, giving consideration to the question of making reduced rates on crushed rock, stone, sand and gravel for road construction when consigned to and the freight thereon is paid by a federal, state, county, parish or township government.

Before the matter can or will be definitely determined, it is intended to ascertain what, if any, reduction necessary to establish a stable price, will be made in the price by those producing and supplying the materials.

By the concluding paragraph of the foregoing statement, it appears that responsibility for the proposed reduction in the freight rates applying on materials mentioned when intended for highway construction is thrown upon the producers of such commodities. Irrespective of the desirability to stabilize prices on building materials, as viewed by the Industrial Board, we beg to submit that the question as to what prices do now or shall later prevail on sand, gravel and crushed stone is irrelevant to the question of freight rate adjustment applying on these materials for the following reasons:

Railroad Administration No Right to Fix Prices

(1) The Railroad Administration has no authority, either delegated or implied, to regulate or to dictate the prices of the commodities hauled by the railroads under its control. In other words, the matter of freight-rate adjustment is entirely separate and distinct from price adjustment.

(2) The universal demand for a reduction in freight rates applying on sand, gravel and crushed stone for highway construction is not a question for barter but one which the Railroad Administration, as a Federal agency, has been asked to grant in order to meet an emergency.

Nevertheless, we understand that the Industrial Board has been requested by the Railroad Administration to make a recommendation as to whether the prevailing prices on sand, gravel and crushed stone are consistent with present and prospective conditions. It is our further understanding that the Industrial Board desires to make without delay such a recommendation to the Railroad Administration, and before doing so wishes to establish a reasonable level of prices on the commodities under consideration. In view of the latter premise we respectfully ask permission to call attention to the fact that an attempt to effect uniform prices on these materials would be altogether impossible for reasons as follows:

Uniform Prices Impossible

(1) There are some fifteen hundred permanently established sand and gravel plants, the product of which is shipped by rail, widely scattered over the United States, representing an estimated investment of $150,000,000 and a daily employment of 15,500 men.

(2) There are innumerable temporary

facilities for supplying sand and gravel by teams and trucks from streams, from the side of the road and deposits on the farm, which come in competition with the permanent plants.

(3) Because of the lack of uniformity as to the occurrence of the deposits of sand and gravel there is no possible standard in methods of operation.

(4) There are no standard specifications covering the output of sand and gravel plants as is the case in the production of steel and cement, and to a less degree, with lumber, brick and tile. The cost of production, therefore, varies with the laxity or severity of the requirements of the trade.

(5) There are many physical and uncontrollable factors, reflected in the cost of production, which vary even between adjacent deposits:

(a) Nature of the deposit, including its quality, extent, gradation as to the ratio of fine to coarse material and freedom from deleterious matter.

(b) Character and depth of the overburden.

(c) Availiability of markets for the various sizes produced so as to maintain a balanced output.

(d) Water supply and provision for disposition of waste.

(e) Accessibility of labor to the plant.

(f) Proximity of fuel, repairs and supplies.

(g) Attitude of the transportation companies in maintaining reasonable and competitive freight rates and providing adequate equipment and facilities for handling shipments offered.

(6) The situation is further complicated by the fact that the same varying conditions apply to the production of crushed stone, a commodity directly competing with sand and gravel but which costs more to produce. Any attempt at stabilizing sand and gravel prices, therefore, would involve the establishment of a proper relation of prices between these competing materials.

Sand and Gravel Prices Low

Realizing that the foregoing varying and confusing conditions will prevent the Industrial Board from forming a logical conclusion without a very exhaustive and much prolonged investigation, we have, at the request of the Construction Materials Division, undertaken to secure by telegraphic communication comparative prices on sand and gravel from the larger producing centers throughout the United States, taking 1916 prices as the base, since there was no general advance on these materials previous to 1917. We have obtained data from thirty-seven cities within twenty-six states. We believe that the information collected is representative of the prices prevailing through the country.

A tabulation of the data referred to indicates that prices on sand and gravel have advanced on an average 50 per cent. In contrast to this, statistics collected in cooperation with the Department of Labor show that the operating cost has increased on an average 117 per cent., fixed charges, 82 per cent., and replacement costs, 109 per cent. At least 50 per cent of the cost of producing sand and gravel is represented by direct labor, which in connection with the industry has advanced 85 per cent. In other words, the greater part of the advance in the selling price of sand and gravel is due to the increased cost of labor, leaving only a small percentage to cover the heavy advances in the prices of fuel, supplies and repairs in the production and transportation of which labor again forms the major portion.

In further comparison, we have to submit the following figures:

Cement increased 65 per cent. and iron ore 74 per cent. during the war period, while the price of steel products recently established show the following advances above pre-war prices:

Pig iron	61 per cent.
Steel rails	56 per cent.
Steel bars	80 per cent.
Structural steel	80 per cent.

The wholesale price of all commodities, taking the 1913 average as 100, was, for February, 197.

Prices Lower Than Conditions Justify

It is, therefore, apparent that the prices on sand and gravel are at present not only lower than is justified by the cost of production but are considerably below other basic building materials. Moreover, taking into account the losses which practically every member of the industry sustained during the war period as a result of priorities, car shortage, excessive freight rates and, later, the general restrictions placed on building activities by the War Industries Board, it is obvious that producers of sand and gravel cannot willingly submit to any reduction in prices at the present time. Furthermore, any attempt to establish either a minimum or maximum price on these materials applying throughout the United States because of the great variation in conditions of operation as previously enumerated would work a hardship on the producer as well as the consumer, for in no instance would a uniform fixed price be fair to both.

In view of the circumstances as related and the necessity for quick action, we respectfully petition the Industrial Board to make the following recommendations:

(1) That on account of the varying conditions surrounding the production of sand and gravel, it is impossible to prescribe a fixed price to apply to all plants.

(2) That it appears from the data submitted that the prevailing prices on sand and gravel are as low as reasonably may be expected without reducing wages.

We furthermore respectfully urge that the Industrial Board, because of the emergency involved, render an immediate decision.

Respectfully submitted,
E. GUY SUTTON,
Secretary,
For the National Association of Sand and Gravel Producers.

The National Crushed Stone Association, through its vice-president, John Rice, endorsed the brief in full, but with the following addenda:

That if the railroads will pay a reasonable price for ballast, which constitutes approximately one-half of the output of crushed stone plants, it will enable the producers of crushed stone to reduce the price on commercial business, it being obvious that the average of all sales must be productive of some profit.

As a result of the presentation of the brief to the Industrial Board, supplemented by the verbal arguments, the following recommendation was given out for publication:

In relation to sand, gravel and crushed stone, the Industrial Board announces that owing to the large number of firms and individuals engaged in the business, and the local character of their operations, that competitive conditions within the industry are so definite and persistent that nothing more can be done by the Board than to recommend a continuation of the practice of competitive bidding in governmental purchases.

The brief, together with the recommendation, of the Industrial Board, were submitted to the Railroad Administration and it was on that basis that the reduction of 10 cents a ton, applying on materials for highways, was finally made.

Freight Rate Advance in Detroit District Threatened

THE DETROIT DISTRICT freight traffic committee is attempting to put a 50 per cent raise on mineral aggregates moved within the Detroit switching district into effect. A hearing of interested producers was held in Detroit on April 17.

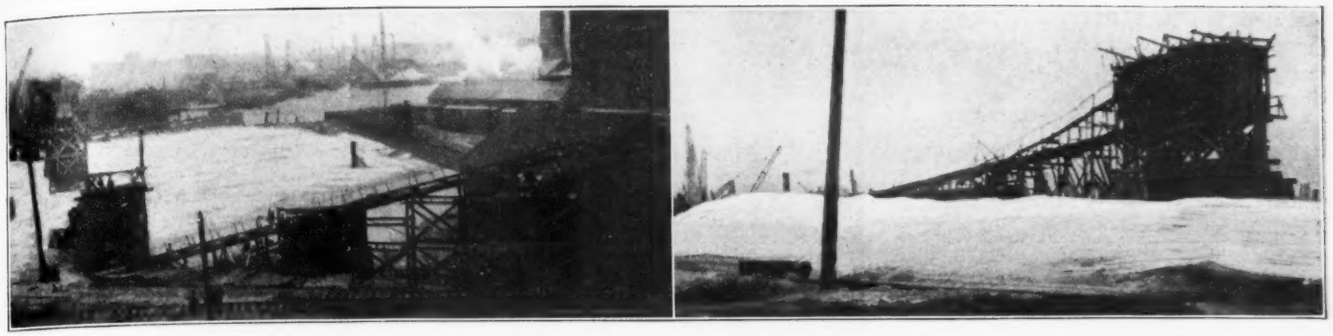
Some Facts About Freight Rates on Gravel

THE INCONSISTENCY of attempting to maintain the freight rates on mineral aggregates put into effect by General Order No. 28 is amply demonstrated in many letters received by ROCK PRODUCTS. A prominent Chicago sand and gravel operator supplies the following interesting facts.

"One of the principal railways entering Chicago from the north and west derives less net revenue per car for hauling beer, dressed meat, or other perishable property from Milwaukee to Chicago, a distance of 90 miles, than it does for pulling gravel from points in Illinois, a distance of 35 miles.

"Is a well-known fact regarding the raising of freight rates on building material under Rule 28 that it was not so much intended for an actual increase in revenue as it was to paralyze the building business during the war period. **Honest and intelligent railroad officials do not hesitate to tacitly admit this.**

"Consequently the raise in sand and gravel rates ranged from 50% to 100%, whereas the general raise seldom if ever exceeded 25%. Material shippers have been able on several occasions in the past ten years to demonstrate conclusively, both to state and interstate railroad commissions, that the rates on sand, gravel, stone, and other building material were high in comparison with rates on much more valuable commodities."



At left, view of Construction Material Co. yard at South Chicago, looking toward Calumet river. At right, looking south over three acres of sand storage; the separator

Special Loading Equipment For Large Sand Storage Yard at South Chicago

How Construction Materials Co. Handles Material Spread Over Three Acres

AT SOUTH CHICAGO on the Calumet River (Illinois) is the sand yard of the Construction Materials Co. of Chicago, probably the largest yard of the kind in the country, having a storage space of more than three acres, and on which is carried a stock of from 20,000 to 60,000 cu. yds. of washed lake sand. While the area reserved for sand storage measures 417 by 380 ft., there are actually five acres used by the plant, including structures, dock and sidetrack.

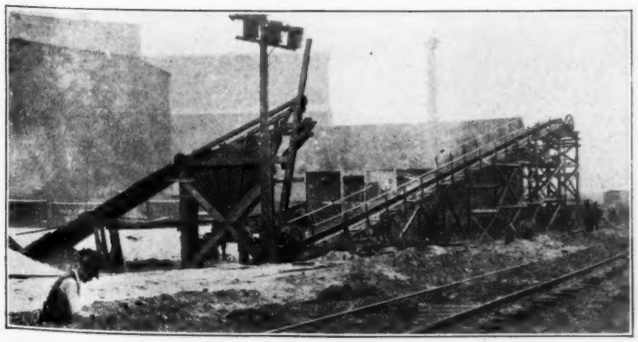
Front view of power-scraper on way to hopper

The size is not the only interesting feature, however. Sand is delivered on the lot by hydraulic means from a boat (described in ROCK PRODUCTS, October 9, 1918), and is reshipped by railroad and motor trucks from special loading equipment in which a power scraper and a conveyor belt are employed.

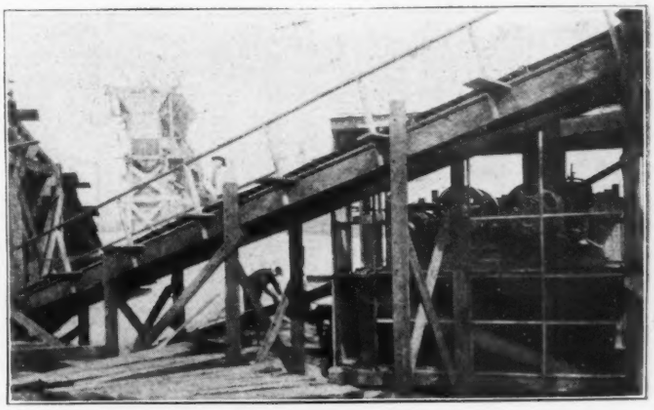
The loading equipment along the railroad is more than 400 ft. from the dock. A 2-yd. power scraper (Sauerman) of unusual design is used to bring the sand up from any point on the lot. It has three sides, but no bottom. At the lower rear edge is a curved runner frame adjustably connected by means of hinge plates and pins. This runner frame is made up of curved bars and cross plates, and attached to it underneath the scraper bucket is the cutter edge, the whole forming a solid piece which automatically adjusts itself in the operations.

When the scraper is drawn by the load cable through the sand, the cutter edge serves as a digger, the sand going up into the bucket through the open bottom and the front which is also open. On the scraper's return trip to the terminal of the pull back cable line, the curved runner frame acts as does the runner of a sled, the pull back cable, being fastened to the upper part of the runner frame, pulling it flat as the pull is exerted. The rear part

Rear view of power-scraper at top of hopper



Hopper and incline over which scraper is pulled, conveyor belt for loading cars—Picture taken while structures were in process of construction

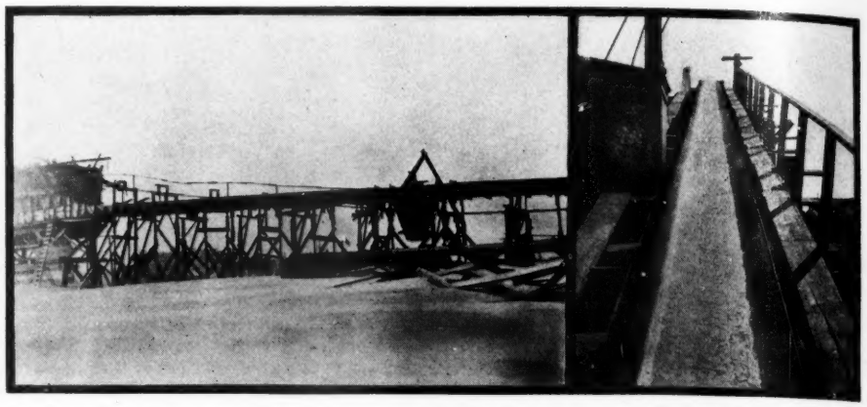


View of "constant duty" hoist and 100 h. p. motor—Structure uncompleted

only of the scraper is covered. This partial covering (top plate) prevents material from escaping through and over the top. After the material has completely filled up to the underside of this top plate, the cutter edge becomes inoperative, due to the fact that the material under the top plate is lifting or raising the back of the scraper.

The scraper is drawn up the incline over the grizzly through which the material falls into two hoppers. One, the smaller, is elevated sufficiently to provide a clearance for direct loading of trucks. It has a capacity of about 7 cu. yds. The larger hopper feeds the conveyor (30 in. belt: 106 ft. center) by the aid of a mechanical apron feeder. Its capacity is a carload.

A "constant duty" hoist operated by a 100 h.p. motor made especially for the company's purpose controls the scraper. It consists of two drums. One carries the full load haul to the hoppers at a speed of 150 to 200 ft. a minute. The other returns the empty scraper to the terminal at a speed of 500 to 600 ft. a minute. The hoist and motor for the scraper is on a raised platform housed in midway of the belt. From it the operator has a clear view of the entire sand acreage, the hopper, the belt and the wagon loading.



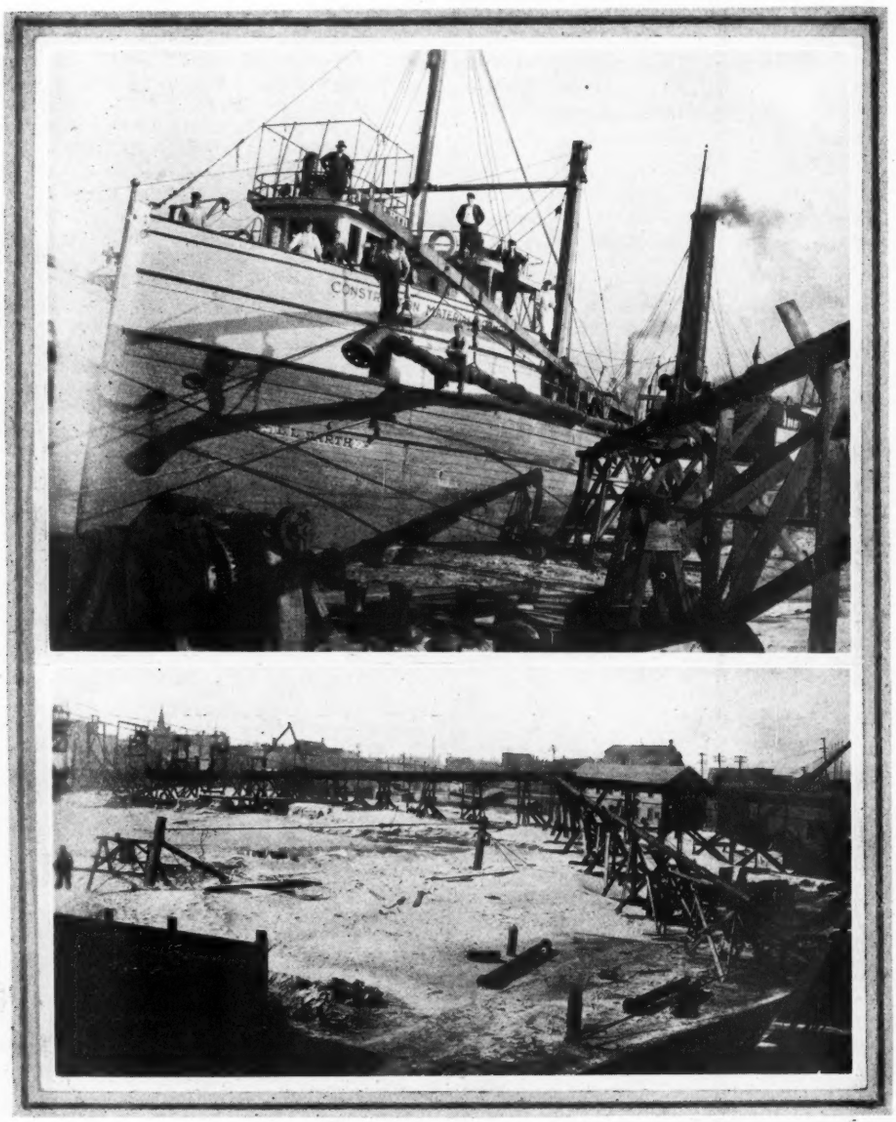
Elevated flume from boat to separator—Belt (30 in.) to elevate sand for loading cars

The belt conveys material up to a height of about 30 ft., from which point the sand is discharged into cars. A 15-h.p. motor at the top of the conveyor structure operates the conveyor.

The switch track for loading begins at a point about 1,400 ft. south of the loading tower; north of the tower and in the yard proper are five extensions of this track, each with a capacity of eight cars, giving storage room for 40 loaded cars. The entire track arrangement is on a downgrade so that empty cars are loaded as they pass the tower and run down onto one of the five extensions by gravity. A line run off the winch head on the main hoist draws the empties down to the tower. It is possible to load 32 cars without a switch and without the use of a locomotive.

The separator shown above and at the top of the preceding page is an arrangement that separates the water from the sand. It is one of the two ways the company has for handling this problem. While the sand flows onto storage, the water is sent back to the boat through the flume.

The Construction Materials Co. maintains offices in the Chamber of Commerce, Chicago. Its president is J. R. Sensibar, and secretary-treasurer, J. A. Foley.



The hydraulic sand sucker, L. L. Barth, with crew after unloading of boat. Below, partial view of yard, water in center seeping away

Four Hours Enough to Cure Sand Lime Brick

WASHINGTON, D. C.—Experiments by investigators of the Bureau of Standards have disclosed that it is useless to cure sand-lime brick for more than four hours, although the curing period of the industry is usually from seven to twelve hours. Tests along this line will be continued for the purpose of discovering what may be the effect of longer curing, as well as to check up the findings from previous tests.

Ohio Quarrymen Discuss Insurance

Experience Statistics of Different Rock Products Industries Explained—More Attention to Accident Prevention Urged

TO WHAT EXTENT "good" experience should share in the burden of "bad" experience in state liability insurance (accident compensation), if at all, was the insistent question at the conference at Columbus, Ohio, April 17 and 18, between the quarrymen of the state and the representatives of the Industrial Commission of Ohio.

It was evident that, though the meeting had been called primarily to discuss safety methods, the state insurance rate question was the mainspring that brought a number of the stone producers. At any rate, those who had been alive to safety methods and had adopted appliances and measures for accident prevention were in a critical mood because of the increase in rates effective July 1, 1918, and the fear of another increase next July, against the facts of their "good" experience. Several of these stated they had paid more in premiums for several years than had been paid out in awards to their employes, yet their rate had been shoved up year to year, the last time from $3.85 to $4.10 per $100 of payroll.

They were of the belief that having, in addition to the "good" experience, adopted safety appliances and methods, increase of their rate was an imposition; that a reduction would be the natural and just expectation.

"Bad" Experience Pays Penalty

Emile E. Watson, actuary for the commission, admitted the fairness of their argument, but stated that until there was a sufficient number with such a record, they would have to continue to share in the general burden of the class. He added that while the critics were paying $4.10 per hundred dollars of pay roll, those with "bad" experience were paying the penalty increase of 30 per cent, making their rate $5.33.

"The commission," Mr. Watson continued, "is constantly working toward the point of separating the 'bad' from the 'good' experience cases and will make the basic rates accordingly when a sufficient number of 'good' experience risks is established."

It appears the insurance rate has gone up for the prevailing popular, or rather unpopular reason—rising prices. In Ohio the death benefit has been increased from $3,400 to $5,000; the $200 limit for doctors' fees has been removed, and hospitals are charging more.

Mr. Watson declared that the Ohio state rates were lower generally than rates in other states, considerably lower in some cases and are far below the rates of private stock companies, while the state pays the highest compensation of any save New York.

Who Has the Accidents?

These explanations were not satisfactory to those of "good" experience and with good safety practices. At the Bluffton-Lewisburg stone quarries there have been no accidents in two years, "but" declared Mr. Patterson, "our rate is going up. Somebody is having accidents and plenty of them. Who is it?" Mr. Watson said he could not disclose names.

A. P. Sandles suggested this hypothetical case: In 1917 a quarryman employing five men had a pay roll of $100 a week, the premium rate being $3.85. Now with the same five men the payroll is $200 and the insurance rate $4.10, making a total premium of $8.20, an increase of more than 100 per cent in premium.

Thomas J. Duffy, chairman of the Commission, intimated that taking a supposititious case was not fair. Actual cases would not work out that way at all. Mr. Watson said that whatever increase there was was due to the increased benefits and to increased amounts of claims. He said the way to cut down rates is to cut down accidents.

Losses Exceed Premiums

Mr. Watson gave the following figures:

Since the adoption of the Ohio state insurance law, there have been 5,431 accidents in the stone quarry classification, of which 49 were fatal and six permanent total disability.

Premiums and loss for the last year were:

LIMESTONE QUARRIES (including crushing)
Premiums $208,907
Losses ..... 238,197 Rate now $4.10

SLAG
Premiums $4,807
Losses ..... 6,543 Rate now $7.95

STONE CRUSHERS (not limestone)
Premiums $1,544
Losses ..... 1,566 Rate now $2.74

QUARRIES (not limestone nor cement)
Premiums $269
Losses ..... 301 Rate now $4.20

SANDSTONE
Premiums $31,537
Losses ..... 39,286 Rate now $4.10

SILICA SAND (quarrying and crushing)
Premiums $27,259
Losses ..... 31,163 Rate now $4.10

CEMENT: manufacturing and quarrying
Premiums $38,906
Losses ..... 29,093 Rate now $1.90

STONE CRUSHING (no quarrying)
Pemiums $11,821
Losses ..... 12,580 Rate now $5.45

STONE YARD (no quarrying)
Premiums $13,149
Losses ..... 16,862 Rate now $1.85

Invites Constructive Criticism

"Compensation insurance in the United States is new," said Mr. Watson. It is a most complicated and difficult proposition.

"It is impossible for me or any one person to understand everything in connection with all the industries—there are 1,000 classifications in this state. We sincerely desire constructive criticism and we want your cooperation. We are not infallible. Everything we propose is subject to criticism.

"There is a bill before the legislature now providing that a cash refund be paid to those with a good experience.

"Much of the greater part of the funds on hand represent a reserve fund to bring all present claims to maturity. It is not a surplus.

"If we did not maintain this reserve fund, the rate would increase by leaps and bounds, because then, each year's premiums would have to take care of the overloads of the previous years. In other words the total premiums each year must cover that year's losses, the payment of which may be spread over a series of years.

Self Insurance, Self Deception

"How this works out is indicated in the case of the firms who carried their own insurance. They thought they were saving money the first year or two, but in each succeeding year they had to appropriate more and more to carry the overloads of previous years' losses, to continue payments on accidents that had occurred in past seasons."

Mr. Duffy's explanation of the increased rate was as follows:

"There were fewer accidents during the war than before the war, all over the country, **but** there were more deaths and more **serious** accidents than usual, causing a great increase in compensation paid. We also pay more to the doctors and to the hospitals. That explains partly the increase. He admitted that probably the penalty imposed on 'bad' experience was not great enough.

The Side-of-the-Road Plant

A. A. Hall, president of the Ohio Marble Co. and other companies, Piqua, Ohio, presented this argument:

"There are from 100 to 150 side-of-

the road and temporary quarry plants operating for a season each year. These plants get the insurance benefit, have no safety devices, no safety rules, no care. They are the fellows who boost our rates, aren't they?"

Mr. Duffy frankly admitted the possibility of Mr. Hall being right and stated that was a point certainly worth investigating.

Committees to Work Together

At Mr. Duffy's suggestion, the quarry operators will appoint a committee of five or seven to meet with the commission to thrash out the various points of contention, to prepare rules and regulation for quarry operation and to study the rate question.

T. P. Kearns, chief deputy, chairman of the meeting and in charge of safety work for the commission, suggested the addition of a workmen's committee. These committees when appointed will act jointly.

Other angles of this meeting relating to liability insurance, compensation, justification for the state's entrance in the business and accident prevention discussed by the members of the commission and the employers will be printed in a subsequent issue of ROCK PRODUCTS.

Quotations Delivered or F. O. B. Plant?

THE ABOVE QUESTION aroused much discussion in the Wisconsin Mineral Aggregate Association and has ended the recommendation to quote F. O. B. plant prices.

In a measure this passes the freight-rate bugaboo direct to the consumer and is therefore a good thing for it at least makes him take an interest in freight rates.

The objection chiefly urged is that F. O. B. plant prices make it too easy for a purchaser to compare his quotation with other quotations made to him or other purchasers.

The course adopted by the association means that it adheres strictly to the policy of laying all the cards on the table. And isn't this the only course to pursue in business today? The time for camouflage is gone by; and cooperation and secretiveness are not good bedfellows.

Sand Producer Cashes in on Rock Products' Articles

THE FOLLOWING is from two successive letters of a producer:

"We desire to express to you our appreciation of ROCK PRODUCTS and your fight for the best interests of the mineral aggregate industry. We particularly like the issue of February 26; it is simply full of interesting and vital reading matter. We especially congratulate you on the editorial on page 38—'Why Pick on the Material Man?' Your letter to the Chicago 'Tribune' sums up the situation 100 per cent."

The letter from which the above extract is taken requested that about 13 copies of the February 26 issue be mailed to certain customers of this sand man at his expense. Three weeks later he writes the following:

"We believe that our investment has paid us big in the 13 copies sent out, as we have just received an order for 20 cars of sand at good prices when just a few weeks ago the same company was endeavoring very hard to beat us down to pre-war prices. We courteously refused the business at the old prices and followed up with a letter calling attention to the article 'Why Pick on the Material Man?'; the order follows."

Recommended Code of Ethics of the Wisconsin Mineral Aggregates Association

1. **QUALITY:**
It should be the aim of each producer to furnish such a high standard of Mineral Aggregate that engineers, architects and consumers in general will readily accept the product of any member without question as to its quality.

2. **SERVICE**
Second only to quality, service is a most essential asset to the Mineral Aggregate Industry. When from delays caused by breakdowns or car shortage a producer can not give the service to which a consumer is entitled, it is considered a part of his duty as a member of this association that he immediately call upon other members of the association for assistance. Service first, always. It is through service we can best show our worth as an association to the consumer.

3. **COST:**
It is highly essential that each producer maintain an active cost accounting, that he endeavor to reduce his costs to the lowest reasonable unit.

4. **AIM:**
It is our aim to produce a high standard of quality with the most efficient service and at a cost plus a reasonable profit, thus enabling the state, county and municipality to obtain their natural resources as economically as is practical to accomplish.

5. **COOPERATION:**
It should be the moral obligation of each producer supported by the association in general to aid each consumer in securing the type and quality of aggregate best suited for the work in question.

6. **SALES METHODS:**
Service and Quality is recognized as the leading factor in all sales; not overlooking the location of the demand with respect to the nearest producing plant. It is recommended that a report of every sale for specific work be recorded with the Executive Secretary on a printed form to be provided.

7. **QUOTATIONS:**
It is not considered good business to advertise by promiscuously giving quotations to everyone in general. Quotation should be made in writing on all specific work (a recommended form is provided.) (When quotations are requested at a given point without having any definite work in view, it is considered good practice to advise, not quote, that at the present prices and freight rates the material will cost a certain sum f. o. b. destination.) All actual quotations on specific work should be f. o. b. plant and the present freight rate given. All quotations should be for a stated period for acceptance.

8. **OPEN PRICES:**
The open price plan of selling having been adopted should be carried out in every detail.

9. **DEALERS:**
The dealer is considered a valuable necessity in many communities. They should be given every encouragement possible consistent with the policies of the association. It is considered good business to protect a dealer in any community by quoting a higher price to the consumer, but never a lower price. The function of the dealer is to perform the retail delivery of the material, and should derive his profits from that source. If he maintains a storage supply and thus performs service, he is deserving of protection.

10. **DISCOUNTS:**
It is recommended that a sum of five cents per ton be added to the amount now being quoted as a penalty and credit allowed if paid on or before the 15th of the month following delivery. This should apply to carload business only.

11. **CONTRACTS:**
A recommended form of quotation in duplicate with provision for acceptance, the signing and return of which constitutes a contract (a recommended form is provided.) Such contract on all work is highly desirable.

12. **EXCESS TONNAGE:**
When a producer calls upon the association to dispose of any excess tonnage, the producer disposing of the tonnage shall be given a ten-cent per ton differential.

13. **CREDITS:**
It is recommended that the association make efforts to determine credit of the various consumers.

Standard Form For Quotations on Sand, Gravel and Crushed Stone

Wisconsin Mineral Aggregate Association Recommends Form Letter with Terms on the Reverse Side

DURING THE LAST THREE or four years with conditions brought about by car shortage, mounting costs, freight rate jumps beyond all foresight, and a host of other uncertainties rock products operators have learned something of good and bad business practices.

Undoubtedly one of the worst practices has been the promiscuous making of quotations both by letter and verbally, without adequate protection to the producer. Many and many an operator has been caught with unfilled orders on quotations made when the cost of production was at least half of what it is now.

Obviously then the first essential of a legitimate quotation is a time limit on deliveries. As conditions can not be foreseen even under the most favorable circumstances for more than one operating season, the time for which the quoted prices hold should not be longer than that operating season. At the expiration of the time limit the producer not the buyer should have the option of renewing on the same terms or of increasing them if conditions justify.

Another important factor is a time limit for the acceptance of the offer to sell at quoted prices, for no producer can afford to hold out an offer indefinitely to the neglect possibly of other business which he could land in the interim.

In order to make matter printed on a letter head as binding as the letter itself, specific reference must be made to it as a part of the offer and conditions. It is a well established principle of law that no addendums or postscripts to a contract are binding unless separately signed and sealed.

All these points are admirably covered in the accompanying proposed standard quotation form devised by the Wisconsin Mineral Aggregate Association, of which O. C. Hubbard, is executive secretary. To be effective, of course, such a form must be adopted by all reputable producers within a district or selling territory.

Recommendation of Form Letter to Be Used

(Opening and closing paragraph to be of any nature desired)

M. Service,
Qualityville, Wis.

Dear Sir:

Beg to quote you on Stone, Sand or Gravel, as follows:

Quantity: All the Stone, Sand or Gravel required to complete construction of ..... estimated ..... tons.

Time of Delivery: Shipments to be made prior to January 1, 1920, on your instructions and as required by the progress of the work.

Price .....

This quotation is for your acceptance within fifteen days after award of contract but not to exceed thirty days from this date and is subject to terms and conditions appearing on the back hereof.

If accepted in writing this quotation constitutes a contract.

Yours very truly,

Accepted
Date .....
Company .....
By .....

All Letterheads to Have Terms Below Printed Thereon

Terms of Payment: Net cash in 30 days, or five (5) cents discount for cash on or before the fifteenth of the month following date of invoice.

If at any time the financial responsibility of the Purchaser becomes impaired or unsatisfactory to the Seller, the Seller reserves the right to require payments in advance or satisfactory security or guarantee that invoices will be paid when due.

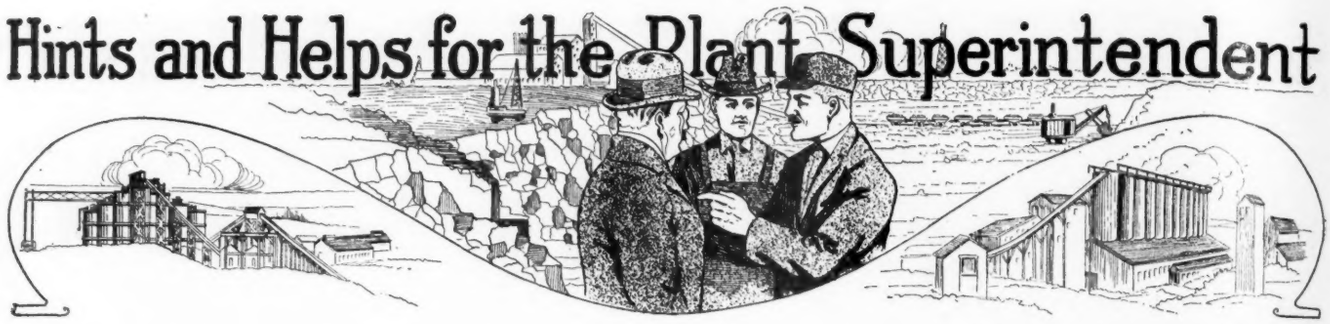
If Purchaser fails to comply with terms of payment or with any of the other terms of sale, the Seller reserves the right to cancel unfilled portions of any contract or order, Purchaser remaining liable for all unpaid accounts.

Shipments: Purchaser shall give Seller shipping instructions a reasonable time before shipments are to be made, and the Seller shall not be responsible for delays in production or shippng caused by strikes, differences with workmen, accidents at its plants, weather conditions, inability to secure cars, coal or other material, or other contingencies not under its control, nor for any delays in transportation.

If Purchaser fails to take the material within the time agreed upon, the Seller reserves the right to extend the time, but shall not be obliged to do so.

Freight: In the event of an increase or decrease in transportation charges or war tax thereon from point of shipment to place of delivery, the amount of such increase or decrease shall be added to or deducted from the price of all material shipped during the period in which such changed transportation charges or war tax are in effect.

Hints and Helps for the Plant Superintendent



Reducing Wear on Conveyors

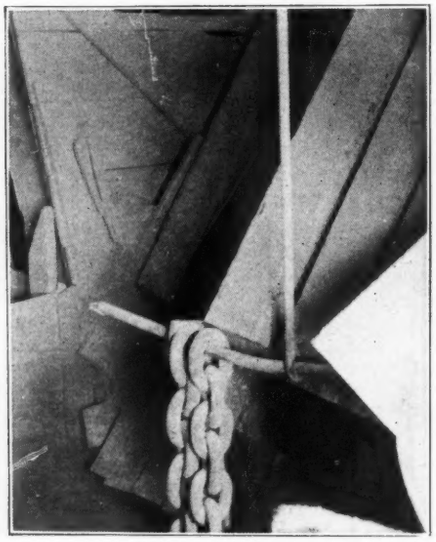
THE LIFE OF A CONVEYOR BELT is often shortened unnecessarily because of the damage done by the constant impact of sharp-edged pieces of material on the rubber surface. This may be reduced to a considerable extent by passing the ore over a screen and by delivering the undersize to the belt before the coarser particles.

The bottom of the chute leading to the belt conveyor is removed and replaced by a small grizzly, with the bars spaced so that only fine material will pass through. In the operation of this modification, such material will form a bed on which the coarser particles will impinge, thus reducing, to a considerable extent, the damage usually done to the surface of the belt.

Slowing the Flow on Chutes

IN THE CONSTRUCTION of crushing and screening plants the mistake is sometimes made, or the conditions sometimes necessitate the construction of material chutes on too sharp an incline. No piece of plant equipment is proof against boulders or big chunks of stone shot down a chute with the velocity of a cannon ball, besides the danger to workmen.

Various devices are used to slow up the speed of the sliding material from deflector vanes on the sides of the chutes to grate bars hung across the ends. The simpliest possible and most ready available device is shown in the accompanying view—a pair of heavy chains hung against the end of the chute.



Retarding flow on steep chutes

How Deep Does It Pay to Strip

WHAT IS THE MAXIMUM DEPTH one can strip a gravel or stone deposit with profit? The illustration shows stripping operations in the Hillsville section of Pennsylvania where a maximum of 40 ft. of shale over limestone is removed and wasted to reach the limestone. What is the deepest stripping you know of?

Stripping 40 ft. of shale

Details of a Successful Blast

THE SKETCH BELOW and the views on the opposite page illustrate what W. Scott Eams, general manager of the New Haven Trap Rock Co., terms "one of the most successful shots we have ever had."

The estimated quantity of rock dislodged and reduced to crusher-feed size was 60,000 tons and the expenditure in powder was 5,000 lbs. of 60 per cent dynamite, or something better than 10 tons of rock to a pound of powder.

In all 50 holes were drilled—38 horizontal or snake holes 28 ft. deep, or in from the quarry face, and 12 vertical well-drill holes 8 in. in diameter and approximately 60 ft. deep.

The snake hole drills were about 10 ft. apart and the well-drill holes 25 ft. apart. Each of the well-drill holes was loaded with about 150 lbs. of dynamite, and the remainder was about equally distributed in the snake holes—approximately 85 lbs. in each.

The New Haven Trap Rock Co. has the largest plant in New England. In the last four years over a million and a half tons have been marketed. Some of the details of this plant will be published in a later issue. Alexander McKerman is superintendent.

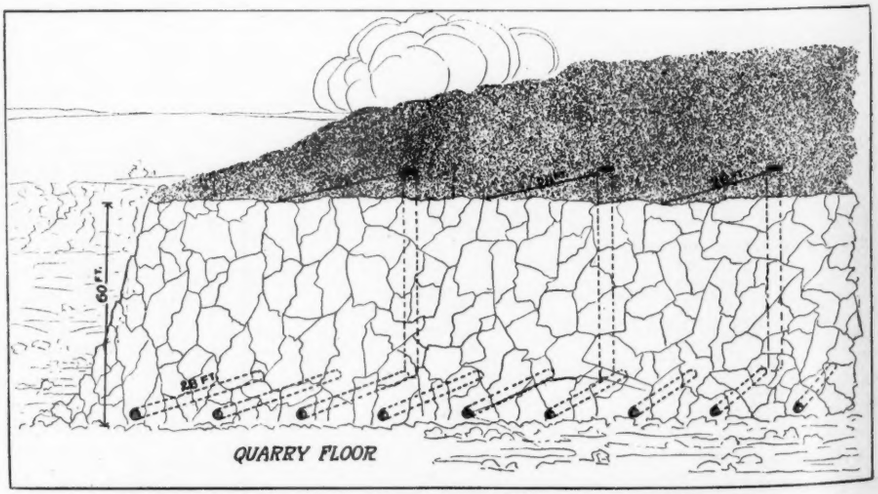
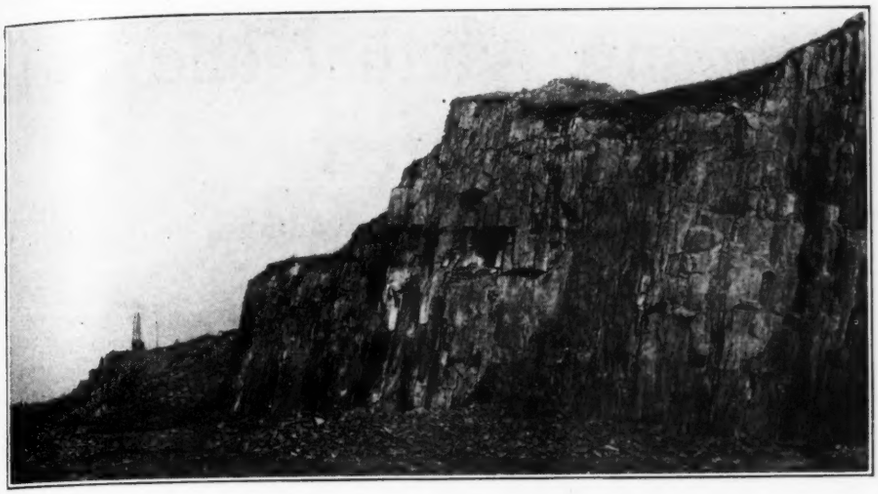
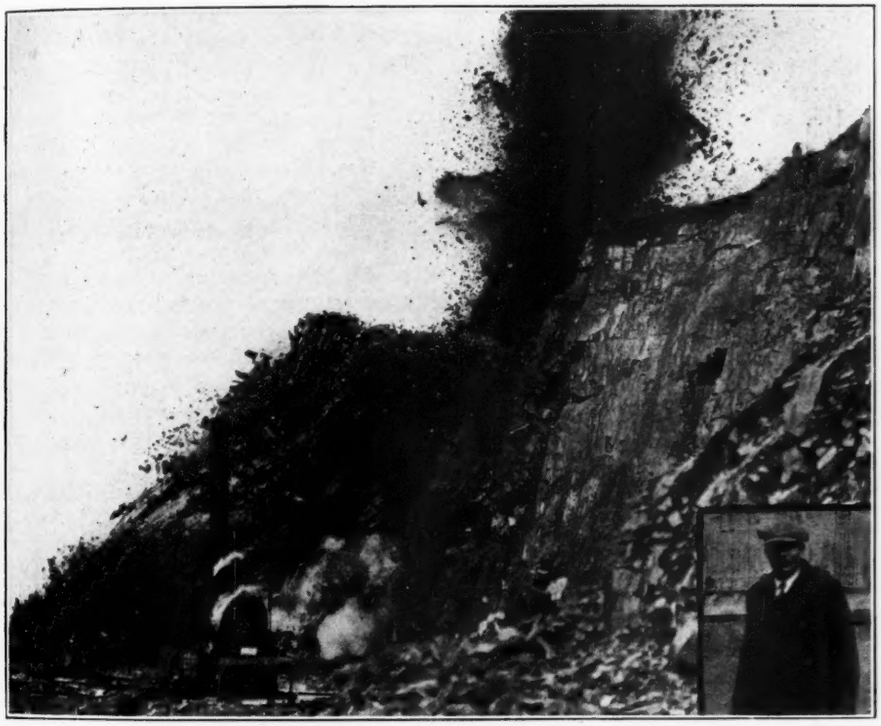
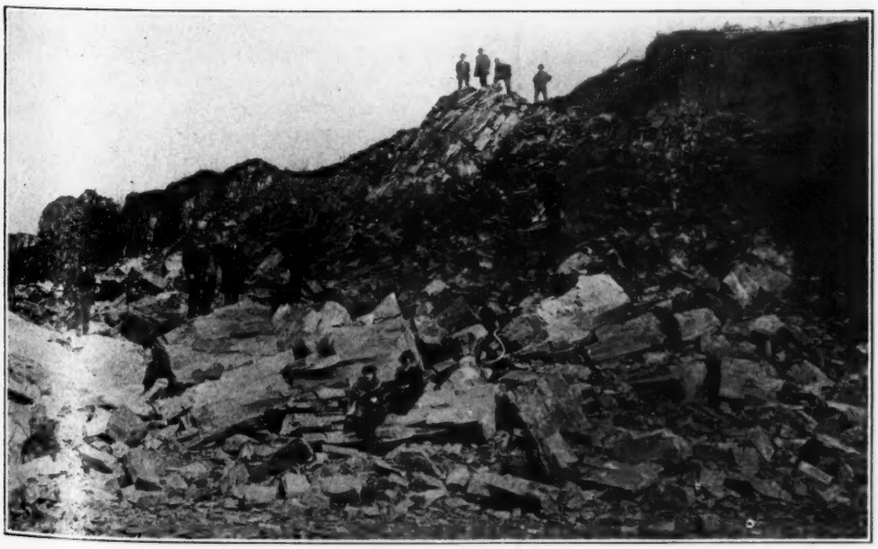


Diagram showing arrangement of drill holes for 5,000-lb. blast



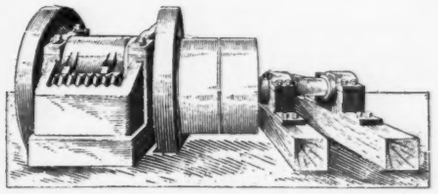




Snake-hole drilling for big blast

Idle Pulley for Crushers*

ROCK CRUSHERS are often placed in out-of-the-way positions, and attention is paid to their condition only when they are in use. It usually happens that primary rock crushing is practiced during a small load, or the driving belt may be running over an idle



Idler for crushers

pulley on an extension of the crusher shaft. Under the conditions often prevailing, the duty is usually severe, and the belt has to be kept tight. When running on the idle pulley the strain is still there, in fact to such a degree that it is found difficult to eliminate friction by means of ordinary lubrication.

Trouble from such a cause may be reduced or minimized to a large extent by the provision of an idle pulley keyed to a separate shaft running in separate bearings, as shown in the accompanying cut. The shaft is collared so that the idle pulley is a small fraction of an inch from the crusher driving pulley.

*Engineering Mining Journal.

(1) Quarry face of New Haven Trap Rock Co. before blast. (2) Explosion of 5,000 lbs. of 60 per cent dynamite — Alex. McKernan, Supt. (3) Quarry face after 5,000-lb. blast—60,000 tons of trap rock broken up.

State, Stock-Company, Mutual and Self Insurance Compared

Conclusions Drawn from New York State Experience—Advantages of Mutual Companies*

By W. L. Sporborg
President, Rock-Cut Stone Co.,
Syracuse, N. Y.

IN discussing employers' liability or workmen's compensation insurance I shall refer first to what are known as inter-insurance or reciprocal exchanges. Such an exchange may be a group of employers, unincorporated, with a manager acting under power-of-attorney. These concerns had in 1917 a total premium income of nearly $7,000,000, of which about 60% was automobile business and the remainder almost entirely compensation business.

As regards compensation insurance business only, the management expense or expense ratio of these exchanges has been about as high as that of stock companies. The loss ratio figures I have been unable to ascertain. An exchange under able management might experience both a low ratio and a low expense ratio, but the members are liable to assessment unless they re-insure, and personally I think it is not a good business proposition.

Self Insurance

As to self-insurance, where an employer carries his own risk, that is so obviously a matter of special conditions that it is out of place in this discussion. The self-insuring employer simply gambles on his experience and has no protection against his calamity hazard. In New York state some large employers find self-insurance satisfactory to themselves. Experience figures are not available.

As employers doing business in all the various states and in Canada we have generally the option of placing our compensation insurance with a stock company, or with a mutual company, and the considerations which should determine our course in this are three: Safety, Cost, and Service. No one of these considerations is any more important than either of the other two.

I firmly believe that good mutual insurance is the best insurance of all, and this is true of fire insurance as of compensation insurance; and if it is true the facts of experience should show it to be true. You will notice that I speak of good mutual insurance, and my test is this: That it must be equally as safe as stock company insurance, and it must render better service, and it must cost less money.

I shall refer now to compensation insurance in the State of New York. I have access to New York statistics and not to others. The underlying principles of insurance are the same everywhere, it is not a matter of locality, and we may reasonably expect that the experience of any one State will be similar to the experience of every other State, under similar conditions.

New York Law Fixes All Rates and Payments

The New York compensation law became effective July 1, 1914. It created what is now the Industrial Commission, conferring upon it broad general powers. The law created also the State Insurance Fund, which is administered by a manager, under the control of the Industrial Commission. The State Fund writes mutual compensation insurance, under the law, which limits and defines its function to an insurance of the compensation liability. The State Fund must under the law issue a policy to any applicant.

The law provides for the payment of compensation to employes for injuries received, according to the nature and extent of the disability and the earning capacity of the employe. The law provides further that the employer must secure the payment of such compensation by insurance in a stock or mutual company, or in the State Fund, or by self-insurance.

The rates of insurance are fixed by the State Superintendent of Insurance, under the law, and all insurance companies including the State Fund, must write their policies according to the manual of rates, so-called.

Claims of employes for compensation are computed according to the law and rulings of the Industrial Commission, and the Commission reviews all claims and orders payment made by the insurance carrier. It makes no difference whether it is mutual company, a stock company or the State Fund. This procedure is the same.

I have gone into this to make clear that all companies writing compensation insurance in the State of New York are on the same basis as to their premium income, because they must all write at the manual rate, and as to their loss ratio, because they must all pay their claims as ordered by the Commission.

Comparison of Loss Ratios

Therefore, if we find as between the stock companies and the mutual companies and the State Fund, that there has been a continuing difference in their loss ratio experience, running through the years, we must look for the cause of this difference in some fundamental difference in the nature of their business.

We do find such a continuing difference in their loss ratio experience. It appears that of the compensation business written in 1917, the State Fund wrote about 16%, the mutual companies about 16%, and stock companies and self-insurers the remainder.

For the year 1917, the loss ratios were as follows:

State Fund, 71.01%—stock companies, 59.88%—mutual companies, 50.03%.

For the entire period of the present law, from July 1, 1914, to Dec. 31, 1917, it appears that the loss ratios were as follows:

State Fund, 71.58%—stock companies, 64.23%—mutual companies, 53.53%.

As to the State Fund with its extremely high loss ratio experience, we must remember that it is under the great disadvantage that it may not exercise selection of risks, but must under the law take any risk that is offered. A risk that no company will carry because of bad moral hazard or bad management can insure in the State Fund.

Why do the mutual companies experience a loss ratio 10% less than the stock companies?

Stock Company's Weakness

The agency system is a factor. The interest of the local agent is to bring in business, and to keep it after he has secured it. The agent has no money incentive to keep away from a bad risk, or to recommend its cancellation if he becomes convinced it will be a bad risk. Local personal friendship enters into it also. The stock company has in itself a factor working against the manage-

*Based on a paper read at the Buffalo convention of the National Crushed Stone Association.

ment and against favorable experience, to that extent. The condition is inherent in the agency system, and the stock companies are bound to have at all times some unprofitable or less profitable business.

Of course I would not say that all stock company business is bad business; that would be absurd, but this is true, that the average employer becomes a better risk when he is in a mutual company.

Advantages of Mutual Companies

To begin with, there is the question of cost. The cost of safety first work comes out of the employer's pocket, and an accident prevented is of course a saving to the insurance company, and that saving goes ultimately to the stock company stockholders as dividends on their stock, or back to mutual policyholders as dividend on their permiums, as the case may be. So the mutual policyholder has a money incentive to accident prevention, and the stock company policyholder has none and it is bound to show and it does show in the loss ratio 60% and 50% respectively. The percentage of number of accidents, to number of employes covered by compensation insurance, was also much lower in mutual companies than in any other form of insurance.

There is a personal factor that enters in here also. The average man, when he reads his mutual company's report, thinks of his own accident record, and he knows the insurance company has looked it over, and if his record is good he feels good about it. Certainly no normal man would like to be dropped from a mutual company.

I hope I have made it clear that the difference of 10% in loss ratio experience, as between mutual and stock companies, is the logical outcome of a fundamental difference between them. I do not see how the stock companies can effect any change in this, unless they will write mutual insurance.

Cost of Insurance

The total cost of insurance in a mutual company is its disbursements in settlement of claims, plus its expense in doing business. To the mutual policyholder his insurance cost is, of course, his premium payments less his dividends or refunds. The combined loss ratio and expense ratio of all mutual companies doing business in the State of New York was, for the year 1917, 72.5%. Some companies of course did better than others. The company in which our own insurance is carried, and of which I am a director, earned an underwriting profit during the year 1917 of 34.4% and we expect that it will be about the same for 1918. The State Fund did business in 1917 for 78.8%. The stock company policyholder of course pays 100%.

The matter of the rendering of good insurance service is of course a matter of individual company management. Inspection service must be competent, accident prevention must be real, and claims must be settled promptly. A company must stand or fall on its own performance, whether it be mutual or stock.

Safety of Various Policies

Now as to safety, the insurance laws vary greatly in the various States, and so also does the financial stability of insurance companies. The large stock companies with their tremendous assets are presumably well managed and afford to the policyholder practically an absolute guarantee of safety, though this is not necessarily true of every stock company, nor is it true of every mutual company.

Wherever the insurance law is lax, we may reasonably expect to find insurance concerns managed by persons without character or experience, and operating along lines that invite disaster. Full and reliable information about all insurance concerns is available, from the Alfred M. Best Co., of New York City, the standard authority for insurance statistics. Mr. Best has furnished me with the information I am using here, all except what I have from our own insurance company, and I acknowledge my obligation to Mr. Best.

Under the New York law, mutual and stock companies are required to establish the same reserves. The Superintendent of Insurance exercises control, and requires mutual companies to maintain as a reserve against each claim the actual cash amount that will ultimately be required to pay such claim in full, according to valuations determined by statistical tables prepared by the Superintendent of Insurance. In addition to this and to further protect policyholders, various mutual companies carry reinsurance as protection against the calamity hazard. Our own company carries such re-insurance with Lloyds.

Fire Insurance

As to fire insurance, more than one source is open to industrial concerns where they may purchase this commodity. Stock company insurance, we all know, is safe and good, and good agencies furnish good service.

Inter-insurance or reciprocal exchanges are not so well known. These exchanges are relatively young. The first one began business in 1881 and is today vigorous and successful. At the end of 1907 there were 31 fire insurance exchanges in operation, and 10 years later the number was 99 including 17 branches and 27 exchanges writing only on automobiles—an increase in 10 years more than three-fold.

The lumber group has experienced a loss ratio, from organization to date, of under 60%; it had at the end of 1917 cash assets of over $4,600,000, and a cash surplus of over $2,500,000. The net premium income for 1917 was over $3,700,000. Its experience, as a group, appears to have been more favorable than that of the stock companies on similar risks, due apparently mainly to the better moral hazard and to exceptionally thorough inspection.

A group of eight exchanges writing only sprinklered risks has had an experience very favorable to its members.

Another group of 17 exchanges writing both sprinklered and unsprinklered risks has had a much less favorable experience.

As to mutual fire insurance companies, let us consider first the Senior and Junior Conference of Factory Mutuals. This group had at the end of 1917 cash assets of over $32,400,000 and a cash surplus of over $13,200,000. Their net premium income for 1917 was almost $25,000,000, and in the last 10 years they they have returned to their members as high as 93.4% of premiums collected. One Syracuse policyholder in this group tells me his insurance costs him net about $600 per **million** (6c per $100).

All other mutual companies as a group increased their income in the last 10 years nearly three-fold and turned back to their members savings running as high as 40% of premiums collected.

In conclusion, and this applies to both kinds of insurance, it becomes necessary for us, each in relation to his own business, to examine into the facts as we can ascertain them and to apply them to our own condition.

Future Outlook

There is to be seen a movement toward health insurance, old age insurance, insurance against unemployment, etc. The New York State Association of Manufacturers has introduced in the legislature a health insurance bill, and hopes to pass it. It is the spirit of the times. We may regard it as the impulse of society, of the public in general, to make sure that industry shall conserve the human asset, and to be insured against the wastage of human material in industry.

This is of to-morrow rather than of today, and while we as employers must be prepared, and in my opinion should be ready and willing to insure our workmen as we insure our machinery, it is enough today to say that the principles which now govern an employer in the selection of his insurance will be his guide in the future.

Vice-Presidents of the National Crushed Stone Association

Two Men Whose Names Are Linked With the Development of the Quarry Industry

JOHN RICE, who has served as first vice-president of the National Crushed Stone Association since its inception in 1918, is a graduate of Yale University and a mechanical engineer by education and early experience.

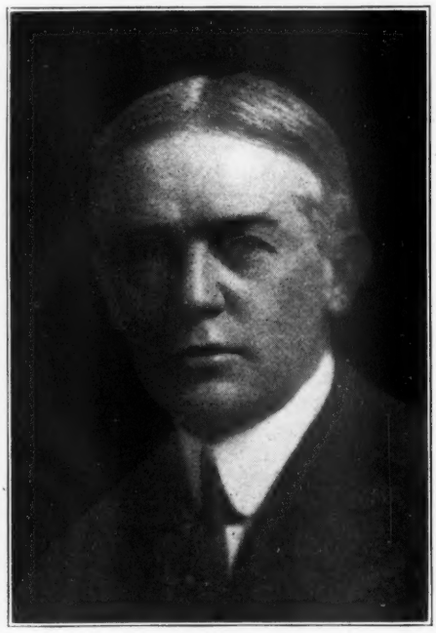
He has been identified with the General Crushed Stone Co., of Easton, Penn., since its inception in 1899, when plants were erected in Redington and Wilkesbarre, Penn., and in North Le Roy, N. Y., for the purpose of furnishing ballast for the Lehigh Valley R. R. on the line from Newark, N. J., to Buffalo, N. Y. For three or four years the company also operated a quarry and crushing plant in the Borough of the Bronx, New York City. The next development was a trap rock quarry at Rock Hill, Penn., on the Philadelphia & Reading Ry., about 35 miles from Philadelphia.

About the same time a plant was established at Akron, N. Y., primarily for furnishing ballast to the New York Central Lines. This was followed by the erection of a plant at Glen Mills, Penn., on the Pennsylvania R. R., about 20 miles from Philadelphia. Some five years ago the General Crushed Stone Co. bought the plant and quarry of the Kelley Island Line & Transport Co. at Akron, N. Y., and consolidated that operation with its original plant at this point. Since then new quarry properties have been developed at White Haven, Little Falls, N. Y., and small quarries at other places.

For the last 10 years Mr. Rice and his associates have also been interested in the cold-mixed bituminous paving material known as Amiesite, and plants for the manufacture of this material have been established in connection with the crushing plants at Rock Hill, Glen Falls, White Haven, Akron and Little Falls. Together with other licensees of the Amiesite company (of which Mr. Rice is also the president) the General Crushed Stone Co. has furnished a substantial proportion of the bituminous paving in New York, Connecticut, Pennsylvania, New Jersey and Maryland.

For about 12 years Mr. Rice and his associates were also in the powder business as the Pluto Powder Co. This concern they sold in 1915 to the Aetna Explosives Co.

The General Crushed Stone Co., whose destinies Mr. Rice has guided so long, is one of the most progressive business corporations in the country in its treatment of and in its cordial relations with its employees. For, as all those who have come in contact with him know, Mr. Rice is a practical philosopher and a pioneer in those practices which place men, good will and organization loyalty above all other considerations.



John Rice

B. D. Pierce, Jr.

Mr. Rice was the practical founder of the Eastern Stone Producers' Association, which is undoubtedly one of the most progressive local trade associations in the country. During the war he took an active part in the solution of the national problems of the stone industry and at the same time served the nation with equal unselfishness as a dollar-a-year man of the U. S. Fuel Administration—he was the fuel administrator of his home district.

Mr. Rice has broad visions of the future development and usefulness of the National Crushed Stone Association.

B. D. Pierce, Jr.

Yale University can also claim the distinction of graduating the second vice-president of the National Crushed Stone Association, B. D. Pierce, Jr., president of the Connecticut Quarries Co., of New Haven, Conn.

Mr. Pierce started in the contracting game for himself in 1884 under the name of the B. D. Pierce, Jr., Co., of Bridgeport, Conn. In connection with his contracting business he operated a number of small quarry plants on construction work and thus broke into the crushed-stone business. His first permanent plant was in the city of Bridgeport, where he supplied the crushed stone for municipal construction work for years.

In 1898 he purchased a ballast plant in Connecticut and furnished much of the crushed stone ballast for the New York, New Haven & Hartford R. R. Four years later he effected a consolidation of a number of Connecticut quarry and crushing plants into the Connecticut Quarries Co., of which he has been president ever since.

In 1913 Mr. Pierce sold out all his interests in the B. D. Pierce, Jr., Contracting Co. in order to devote all his energies to the Connecticut Quarries Co. When the war came on, however, he devoted nearly all his time to the Government as chairman of District No. 1 of the War Service Committee on Mineral Aggregates. He also served as the Connecticut chairman of the Committee on Conversion of Resources, which was established to distribute work on war material to assure maximum production.

1—Mt. Carmel plant of the Connecticut Quarries Co.; 2—Loading bins with trolley tracks; 3—Thirty-ton trolley dump car; 4—Crusher for tailings from sizing screens

Mt. Carmel Stone-Crushing Plant With Trolley-Car Distributing Facilities

THE ABOVE ILLUSTRATIONS show the Mt. Carmel plant of the Connecticut Quarries Co. All shipments from this plant are by trolley car, on the lines of the Connecticut Co., which control all the street-car and interurban electric lines in the southern part of Connecticut.

Within a radius of 30 miles are three big cities—New Haven, Bridgeport and Waterbury—and many smaller cities and towns. The type of car used is shown in (3) above. It has three individual ride-dumping units, each of a capacity of 10 tons.

Adds to Delivery Facilities

Not only are the freight rates considerably lower, but it is possible to make city deliveries at the dealers' yards or on the streets where the material is needed. As suburban lines parallel all the important trunk-line roads the trolley offers unusual facilities for making deliveries of road stone at any point along any of the lines.

The material is trap rock and the capacity of the plant is about 400 tons per day. The quarry is on the side hill to the right of Fig. 1. Three gyratory crushers are used, a No. 7½ and two No. 5s. The output of the initial crusher drops by gravity into the scalping screen below. The tailings drop into a No. 5 and the rejects from the sizing screens over the bins are dumped to another No. 5, shown in Fig. 4.

The Physical Effect of Lime on Soils

Further Proof That All Kinds of "Agricultural Lime" Have Their Particular Uses

By John H. Voorhees
New York State College of Agriculture, Cornell University, Ithaca, N. Y.

WHILE GETTING DOWN to the hard facts about buying lime farmers are gradually getting away from some of the underlying principles. Farmers have been taught to buy lime on the basis of cost of actual lime or calcium oxide. It is possible to conceive of conditions under which a specific form of lime should be used to the entire exclusion of other forms; and yet, in general, the form of lime to use depends primarily upon this factor of cost, and the quantity used should be regulated by conditions of soil, kind of crop and the like.

In other words cost is an important factor but the cost and convenience of handling must be considered. The user of lime is not concerned so much with the cost of railway transportation so long as the delivered price seems to be reasonable. The cost of handling after the lime arrives at the railroad station is the next consideration. The concentration, ease of handling, storage and distribution, and the probable cost of each operation are items of practical significance, especially if the farm is located at some distance from the railroad.

As a factor of cost, fineness of division should not be overlooked. Good burned lime showing a relatively high percentage of actual lime, indicating comparative freedom from impurities, properly slaked, is as fine a powder as it is possible to obtain and there need be no doubt of its immediate action, and likewise complete utilization in the soil. The fineness of ground limestone is entirely arbitrary with the manufacturer. The finer it is, the quicker and more complete will be the action, and greater root contact obtained.

Soil Requirements Paramount

These general principles should not overshadow the requirements of soil and crop brought about by special conditions which often exist or arise and help to determine the form of lime to use regardless of the comparative cost and the foregoing suggestions relating to purchase. Most economic crops prefer neutral or alkaline soils but there are a number of crops sensitive to alkaline soil conditions. These are injured less and thrive better when the slower acting carbonate (limestone) is used. On the other hand, for quick growing crops requiring a soil rich in organic matter and available plant food, burned lime is preferable because it brings about chemical changes of the organic plant food more quickly, causing a rapid and succulent growth, greatly desired in all kinds of market garden crops.

One point of importance is the matter of solubility of the different forms of "agricultural lime." The burned lime which is changed to the hydrated form by slaking is readily soluble in water, and hence becomes distributed throughout the soil more quickly and much more thoroughly than the carbonate. It is true that slaked lime changes to the carbonate form in the soil, but this change requires some time even under the most favorable conditions, and the thorough distribution of it throughout the soil is effected before the change to the carbonate form takes place.

Physical Effect on Soils

The physical effects of lime are likewise quite as important. When I was a boy my father often said to me: "Burned lime should be used on heavy soils and finely ground limestone should be used on very light sandy soils." One seldom hears statements of this character among farmers and Experiment Station workers today. The cost of any kind, form or brand of lime has become paramount.

It is not thoroughly understood and what understanding there is of the physical and mechanical effects of lime involves a very advanced knowledge of soil chemistry and physiology, but it is definitely known that application of lime upon heavy soils makes them less sticky, more crumbly, more friable, more easily cultivated, and water passes through them more rapidly as a result of increased porosity. This condition is brought about by the flocculation or aggregation of the fine clay particles preventing shrinkage in dry weather.

Upon light soils the reverse is true. An application of lime tends to increase the cohesive power of the soil, resulting in a greater water-holding capacity, as well as increasing the power to absorb moisture from below by capillarity. These effects are brought about in proportion to the solubility and distribution of the lime in the soil by the soil moisture. Hence, such effects are apparent only when burned or hydrated lime is used because ground limestone is not immediately soluble, nor is it distributed in the soil except by mechanical means—only slowly by soil solution. On the other hand, the physical effects of lime on a light sandy soil may cause injury, especially if large applications of burned or hydrated lime are used by causing a greater porosity allowing the water to pass through and away, too rapidly. This justifies the quotation above.

It is unfortunate that the advantages of these physical effects cannot be measured in dollars and cents. If they could be, they would not be ignored as they are at the present time. To make a heavy soil more friable improves drainage, makes plowing easier, cultivating easier and all farm operations affecting the soil more easily and pleasantly accomplished; but it takes a horse just as long to walk the length of a corn row ahead of a cultivator on a loose, friable soil as it does on a tight, sticky one. So burned and hydrated lime seldom if ever get the credit for the part they play in making the texture of soil suitable for easy and pleasant work. Few comparisons of lime and limestone in this regard have been made.

Elimination of Secrecy

SECRECY IN COMPETITION has always fostered unhealthy conditions. It has denied to every business man the facts upon which he can guide his business efficiently. Without the facts as to prices and production conditions, he has been forced to carry on blindly, the easy prey of buyers who desired to play the jealousies and suspicions of competitors against each other. Instead of facts, he has had a tangled mass of rumors, hearsay statements and partial data from which to attempt to draw the truth. Price discriminations in violation of the law are almost inevitable under such conditions. Ill-will between buyer and seller are a sure result. As a result prices in more than one industry have gone to ruinous levels, and competitors have adopted such trouble-making and perilous expedients as gentlemen's agreements. Yet much of this could have been avoided by a frank, open exchange of information.—Franklin D. Jones.

That is one way "Rock Products" can help and does help.

President of Lime Association on Prices

William E. Carson, of the Riverton Lime Co., Virginia, Answers a Few Pertinent Questions in the Minds of All Rock Product Producers

ON THE THEORY that it will increase volume of business, some theorists say lower prices and you will increase volume of business, and by this increase recover lost profit.

In other words, at a period when there is only about fifty percent of normal business, use up your raw material, burn up your kilns, wear out your machinery, hit up your energy, to make a profit you can realize equally well by not using such false and wasteful methods. Is this common sense?

I feel that it is a crime to waste your property and ability without getting a fair return, and it is easy to reduce while it is difficult to raise prices.

The theorists do not realize that it took a world war to establish decent prices. I do not mean by this unfair prices, for we have never reached such a level in our industry. Now, then, are we to forget or be led astray within six months from our hard learned lesson into the morass of low prices, in order that we may rake the nuts out of the fire for some other industry that has been profiteering during the war? This question answers itself.

Can We Stimulate Business by Lowering Prices?

Any person who hands you this thought in this day and generation should be put under observation in a quiet sanatorium.

We know that business does not thrive on low prices, but on increased tonnage, and that the desire must be created for our commodity before it will be purchased.

This can only be done by getting fair profits and setting aside a part of them for educational purposes. If the public does not realize or know the value of lime, do you think they will want to buy and use it? And if they are educated to its value, what difference does one, two or three dollars a ton amount to in the purchase of a commodity such as ours—that is, if the purchaser really wants it—and how are you going to make him want it except through educational work? How are you going to carry on educational work without money, and how are you going to get money if you lower your prices?

The Gillette Safety Razor was first offered for one dollar and was a commercial failure. The price was raised to five dollars (two dollars and fifty cents of every sale being used to educate the public and create a demand) and it became a success. The public only think in low prices about a commodity they are not much interested in, and are willing to pay good prices for a commodity they are educated to buy. Education costs money and money cannot be made on poor profits.

It has been put up to industries that during the war made excessive profits through an increased demand for their product that they should recede in their prices, and without knowledge or investigation of what happened in our industry we have, in like manner, been so requested.

During the war it was made a misdemeanor and declared unpatriotic to proceed with any type of construction work that did not impinge on the one question, "Winning the War." This caused a decline in the use of lime for construction purposes and agriculturally up to almost seventy-five percent. so that we did not have established the war prices that were made by other industries—in fact it was notorious that manufacturers engaged solely in these lines of work lost money and those who had chemical business automatically lost same with the close of the war.

Is It Patriotic at This Time to Lower Prices?

Now, then, it is apparent that it is utterly impossible to lower prices made during this period of low demand for the commodity while the products that go to make cost of manufacturing, labor, etc., are practically at the same price level without doing serious injury, so we cannot afford to now lower our present selling price.

With the Government under guarantee to pay $2.20 per bushel for wheat, which means high cost of living, lowering of prices means lowering wages. Then have we a moral right to cut wages now? And that is what lower prices mean and lead to.

Our Government has unpaid bills for this war. Lower your prices and you dodge some taxation. Is that patriotic?

Is It Sound Business Policy to Lower Prices?

Show me how, with one-half or one-third your volume of pre-war business, you can manufacture as cheaply as on full capacity, and I will say it is sound policy. But with only a part of your plant running, with your over-head expenses unchanged, it does seem to me that lower prices now is not only unsound but destructive, so that from every point of view, as I see it, the proper thing to do is to sit tight and wait for full tonnage, and above all other things **don't at this time reach after the other fellow's customers,** and thereby disturb the market. This will only cause bad feeling and is rocking the boat at a critical moment.

Don't forget the thought of the times is "live and let live."

And remember that you cannot any more lift yourself by your own boot straps than you can increase or stimulate the building trade by lowering your price.

The entire cost of the lime that enters into a building will not amount to two percent of the cost of the entire building, and the same is practically true in regard to agricultural and chemical lime.

So again I say, don't throw away what you have. Sit tight and support your organization, the Lime Association, that has been erected through years of hard work, and it will bring you tonnage through sound business channels by educating the consumer and creating a market so people will want it, rather than by false economic theories such as cutting the price to stimulate trade which only means the other fellow will do the same and no increase in business volume is made, but all that is best in business life is destroyed—**Confidence.**

Wm. E. Carson.

MR. CARSON'S ANSWERS:

Can we increase our profits by reducing our present selling prices?

Can we stimulate business by reducing our present selling prices?

Can we afford to reduce our selling prices?

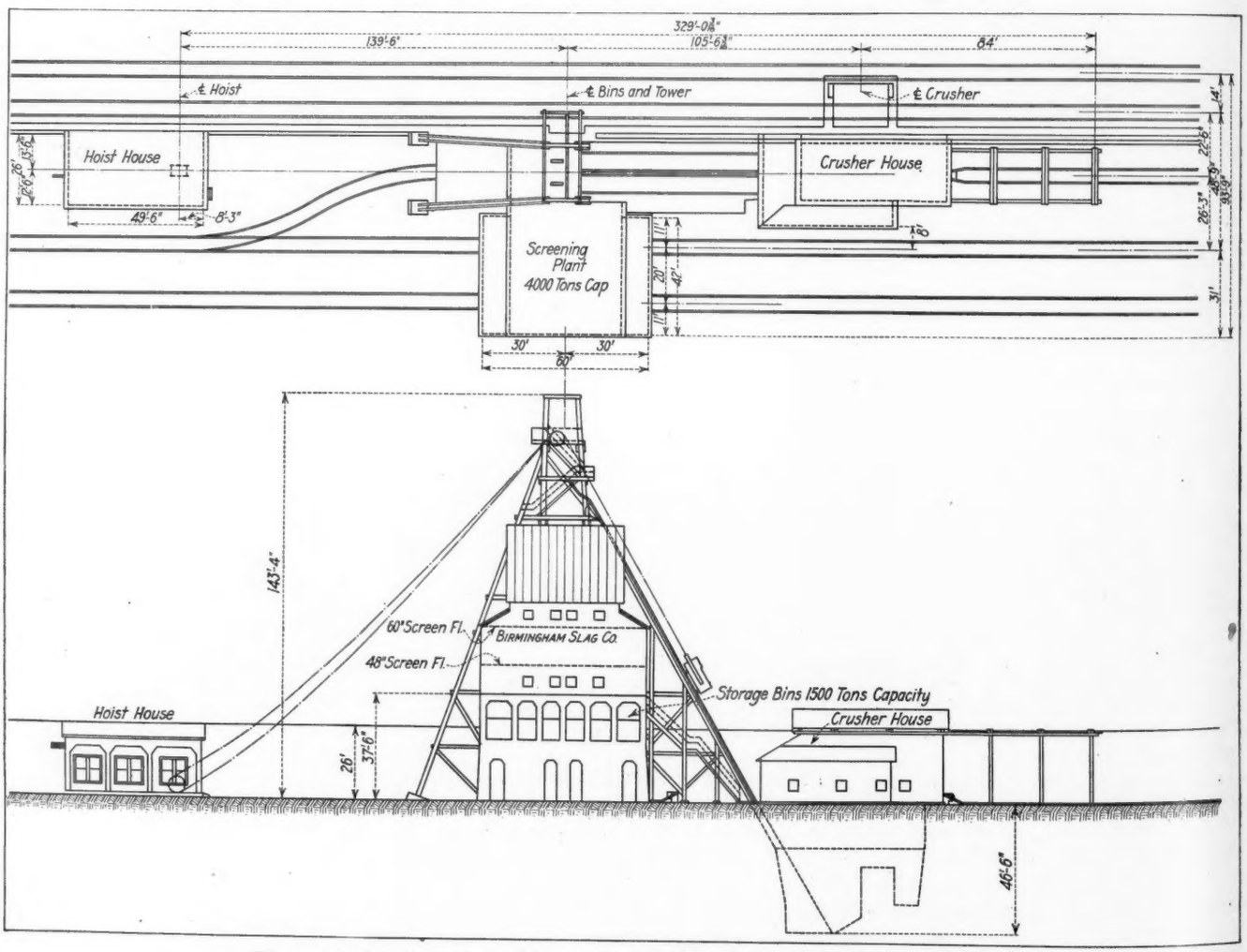
Is it patriotic at this time to reduce our selling prices?

Is it sound business policy to reduce our present selling prices?

Pouring troughs of Tennessee Coal & Iron Co.—Birmingham Slag Co.

Largest Slag Plant in the United States

Crushing and Screening Plant of the Birmingham Slag Co. Represents Two Generations' Experience in Crushed Stone and Slag Business

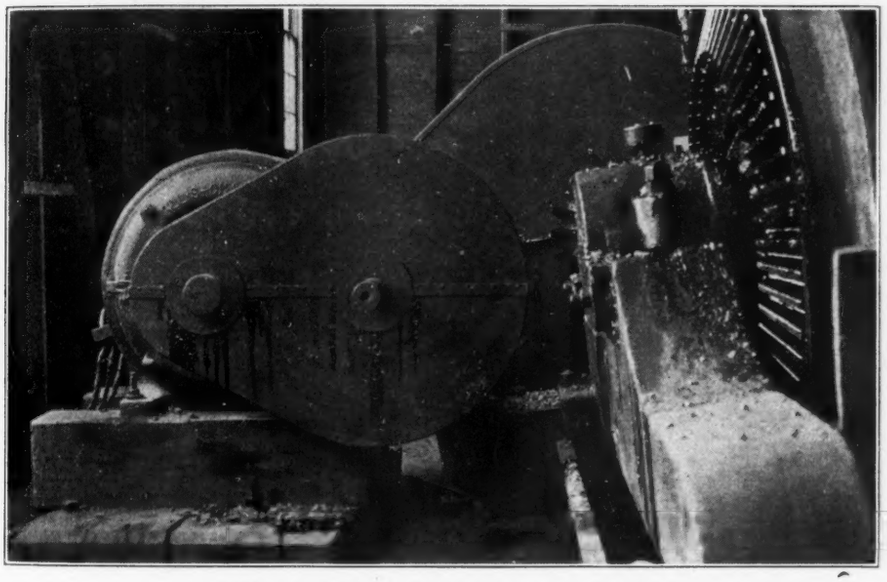


Plan and elevation of crushing and screening plant of Birmingham Slag Co.

THE OPERATING EXPERIENCE of two generations of Ohio quarry men is embodied in the recently completed plant of the Birmingham Slag Co., Birmingham, Ala. Chas. L. Ireland, for many years associated with the France brothers in the France Stone Co., Toledo, Ohio, and his two sons, C. E. Ireland and H. G. Ireland, are the ones primarily responsible for many ideas incorporated in this 4,000-ton per day crushing and screening plant. C. B. Ireland is a third son. The plant was designed and equipped for them by the Allis-Chalmers Mfg. Co., Milwaukee, Wis. The slag plant is on the property of the Tennessee Coal and Iron Co.

The Tennessee Coal and Iron Co. operates six blast furnaces, which produce on an average 3,000 tons of slag per day, seven days a week. The slag company owns this slag from the time it leaves the furnaces. It is poured in four permanent troughs alongside the slag plant (eventually there are to be six troughs) under the control or direction of the slag company. This permits scientific methods to be employed so as to obtain a slag of maximum density and deposited in a manner to permit of the greatest economy and efficiency in excavation.

Large screens on parallel shafts



Side view of electric-motor screen-drive

End view of screen drive showing bevel-gear guards and screen mounting

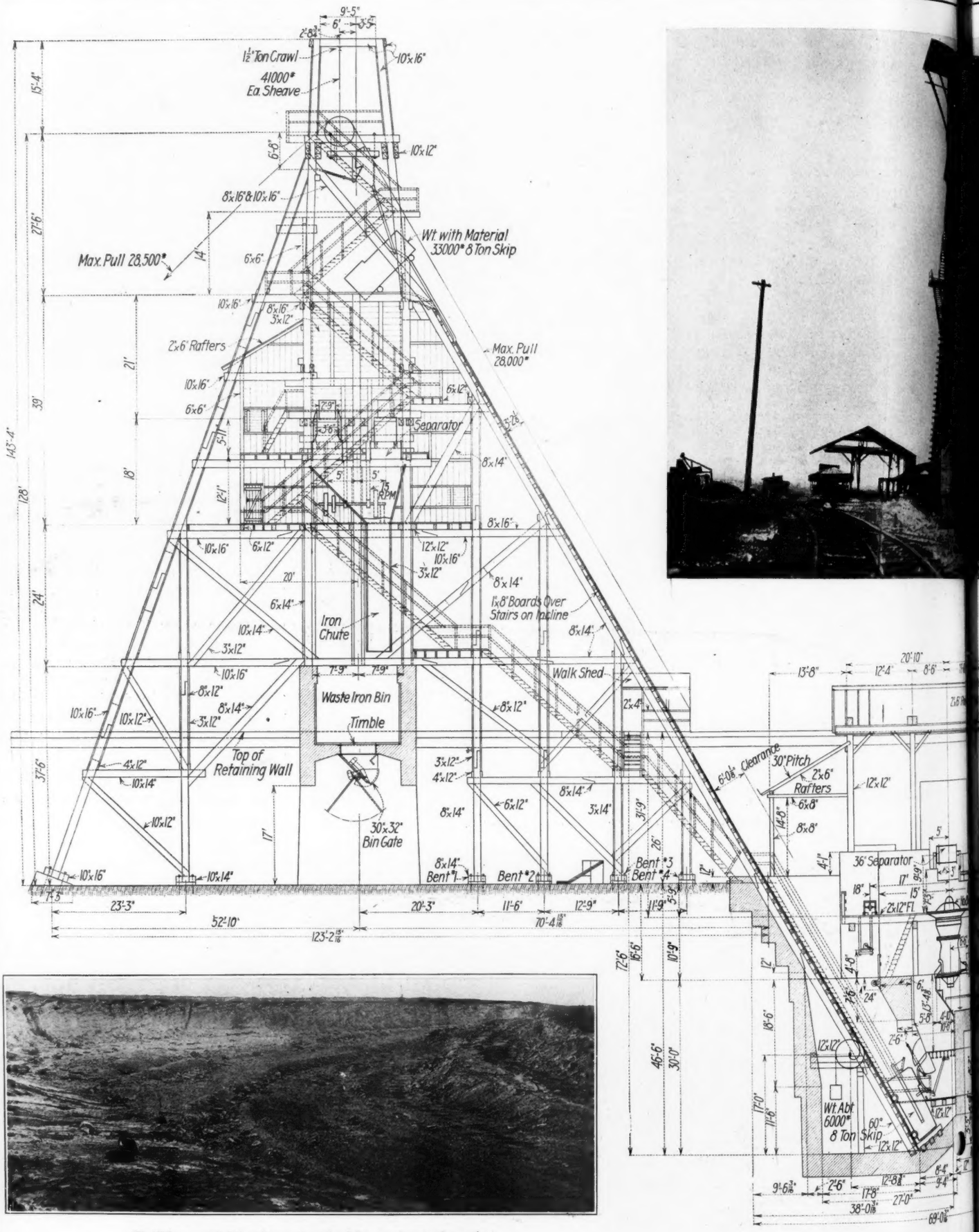
The slag is excavated by 95-ton steam shovels equipped with special bucket teeth (long and sharp). These shovels load trains of six 12-yd. side-dump cars. These trains use the permanent slag-pouring tracks, which belong to the steel company, and which are equipped (or to be equipped) with a third rail for electric motor operation. Six electric motor cars are required for the slag plant equipment.

Crushing Plant

The slag is dumped from the cars into a concrete hopper feeding a shaking grizzley. The material passing the grizzley by-passes the No. 8 gyratory crusher and is chuted to the loading hopper of the skip hoist. Everything that passes over the grizzley also goes over a magnetic roll which separates out the pieces of material composed wholly or largely of iron. The iron goes to a concrete pit alongside the crusher, from which it is loaded out by means of an electric crane and magnet.

The crusher is set in a concrete-lined pit and discharges to the receiving hopper of a balanced skip hoist. The skip cars are all steel, of 8 cu. yd. capacity, and operate on a 150-ft. incline to the top of the plant. The cars are filled and emptied automatically and are controlled by an electric hoist which also operates automatically.

The skips dump end-wise into a large bin, which is provided with two "sling feeders," or oscillating segmental gates. These feed the crushed slag automati-

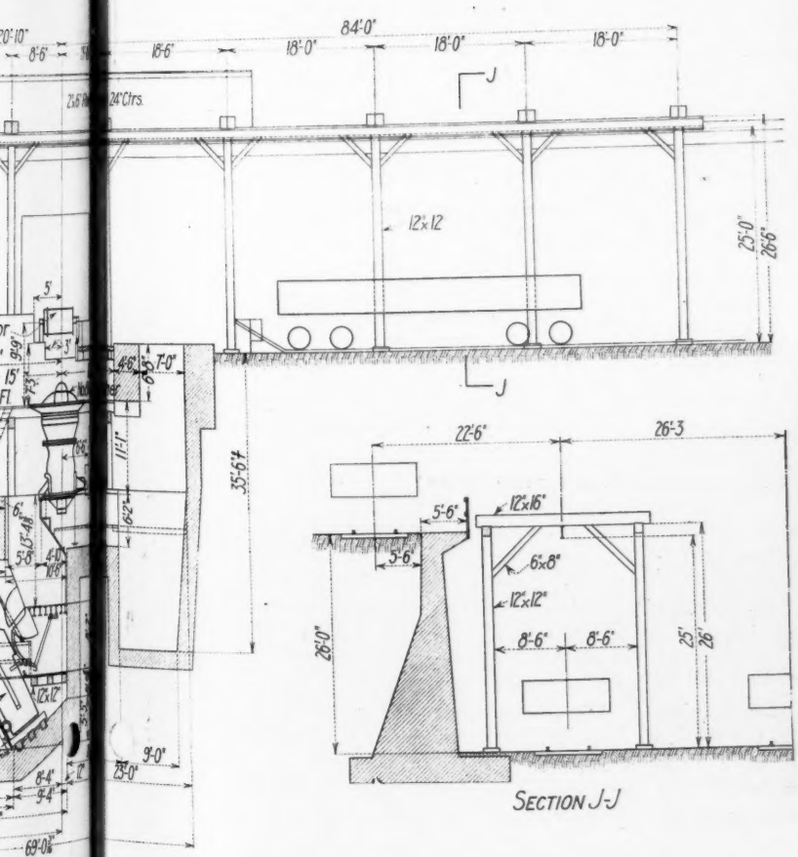


Drilling and blasting slag in big reserve deposit

Plant of the Birmingham Slag Co., Birmingham, Ala., one of the most up-to-date crushing and screening plants

Concrete crusher pit with double-track balanced skip hoist to top of plant—Chute for screen rejections at the left

Shovel cleaning out a slag-pouring trough—Slag pouring is under the control of the slag company, not the steel company



Quarry? No; a slag deposit of millions of tons for a reserve when steel plant is not producing requisite 4,000 tons per day

cally in a constant amount to two magnetic rolls, where all the small pieces of iron, which have been through the crusher, are removed and chuted to a concrete collecting bin for return to the steel plant.

Screening Plant

The crushed slag passing the rolls is fed to screens adjacent to them. These first screens are mounted on parallel shafts and each is driven by a direct-connected electric motor. The speed reduction gears and the drive gears are completely enclosed in steel-box guards, as shown in the accompanying views.

These screens are 26 ft. long and 5 ft. in diameter with ¾-in. perforated dust jackets on the upper halves. The screen plates are perforated to remove four sizes of material as follows: No. 1 (4 to 2½-in.); No. 2 (2½ to 1½-in.); No. 3 (1½ to ¾-in.); No. 5 (¾-in. to dust). The No. 5 (¾-in. to dust) material passes through two vertical chutes at the head of the screens to the floor below, where there are two smaller screens.

The lower screens are placed end to end (with the feeding spouts between) and are at right angles to the pair of large screens above. The two smaller screens which are 16 ft. long by 4 ft. in diameter are also driven by individual direct-connected electric motors.

The smaller screens separate the No. 5 material (¾-in. to dust) into three sizes as follows: No. 4 (¾ to ¼-in); No. 6 (½ to ¼-in.); No. 7 (¼-in. to dust).

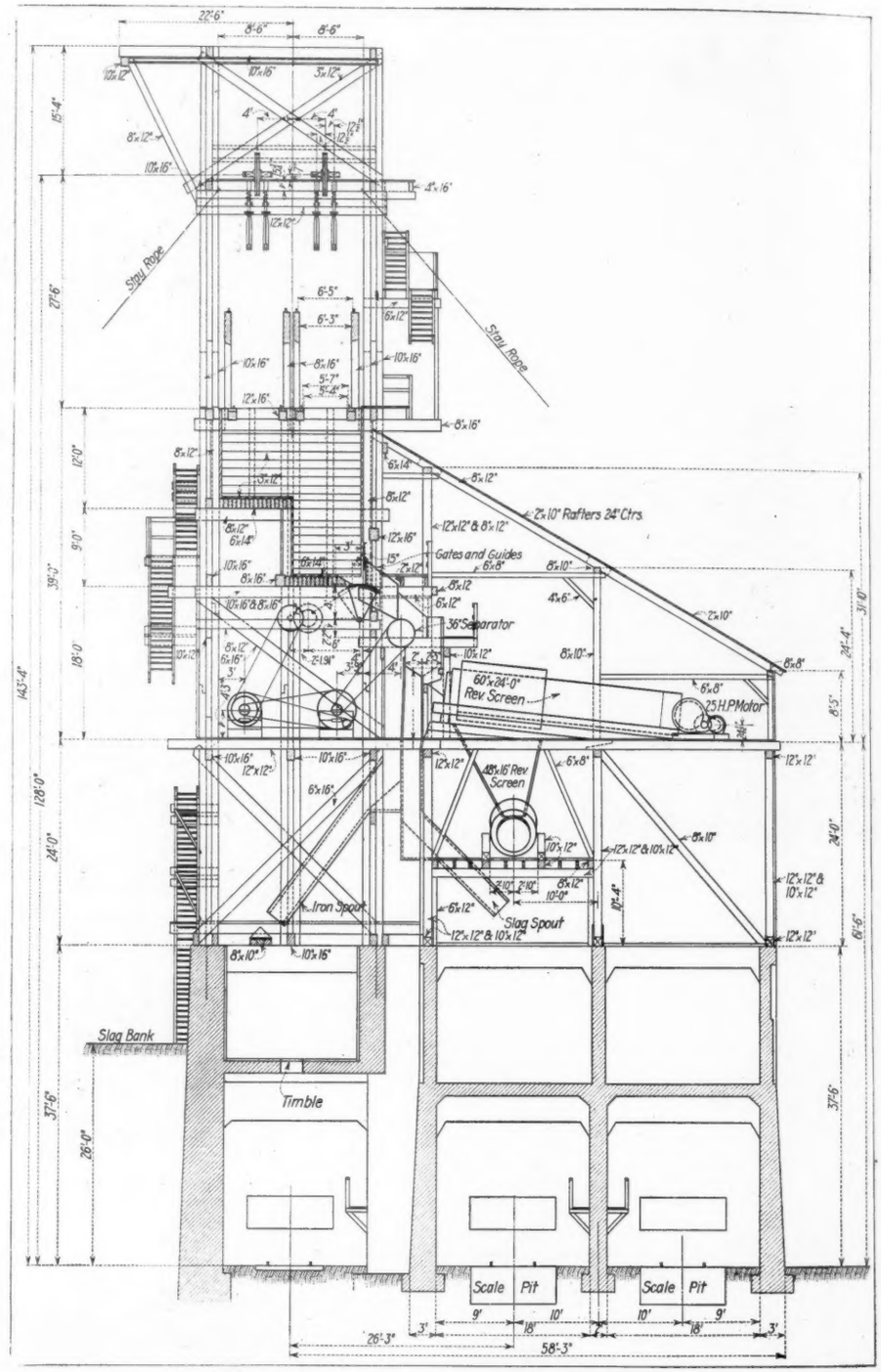
The screening plant is designed so that it can be operated for a maximum capacity of 2,000 tons per day by using only one large and one small screen, or for a maximum capacity of 4,000 tons per day by using both pairs of screens. The large screen rejections are returned to the crusher by a gravity chute.

Storage and Loading Facilities

The screened slag flows by gravity through chutes into concrete storage bins, which have a combined capacity of 1,500 tons. By shifting the chutes two or more sizes can be mixed and shipped on short notice.

Two loading tracks are provided under the slag bins (one is under the iron bin). The bins are emptied through balanced segmental gates, 30x32-in., operated by levers from elevated platforms.

The cars as they are being loaded stand on 75-ft. track scales, which permits accurate loading to orders and saves much delay and annoyance in making shipments. This feature of the plant is considered one of its best, for much time and money was formerly lost in waiting for the railway company to take the cars to its scales, and then often times the slag company was compelled to remove 5 or 6 tons overload with the cars at some out-of-the-way place.



Cross-section showing screen arrangement

To further facilitate deliveries soon after the cars are loaded they are delivered by the slag company's own locomotives to any of the nine railway lines serving the Birmingham district.

Slag Reserve Supply

Although the crushing and screening plant is designed to handle the entire daily output of the blast furnaces, it is not dependent on the operation of the furnaces for its supply of raw material. About a mile from the slag plant is a dump estimated to contain from 10,000,000 to 15,000,000 tons of old slag.

The slag company owns and operates a standard-gauge railway to this dump, which as the accompanying views show, closely resembles a quarry working. The face is 25 or 30 ft. or more high and is drilled with well drills and blasted as in any limestone quarry.

The Birmingham Slag Co. has had its product thoroughly tested as a concrete aggregate and has advertised its wares in thoroughly up-to-date fashion. Shipments are made to points in Mississippi, Alabama, Georgia and Florida. A large part of the output is used in road and pavement work.

Comprehensive Analysis of Labor Problem

Thirteen Principles Put Forward by Committee of the Chamber of Commerce

A STATEMENT OF PRINCIPLES of industrial relations, prepared with a view to furnishing a basis on which American industry can build a national labor program, was submitted April 16 to a referendum vote of the membership of the Chamber of Commerce of the United States. The principles, thirteen in number, were prepared by a special committee of the Chamber after a long period of study of the entire subject of industrial relations. They are:

1. Industrial enterprise, as a source of livelihood for both employer and employee, should be so conducted that due consideration is given to the situation of all persons dependent upon it.

2. The public interest requires adjustment of industrial relations by peaceful methods.

3. Regularity and continuity of employment should be sought to the fullest extent possible and constitute a responsibility resting alike upon employers, wage earners, and the public.

4. The right of workers to organize is as clearly recognized as that of any other element or part of the community.

5. Industrial harmony and prosperity will be most effectually promoted by adequate representation of the parties in interest. Existing forms of representation should be carefully studied and availed of in so far as they may be found to have merit and are adaptable to the peculiar conditions in the various industries.

6. Whenever agreements are made with respect to industrial relations they should be faithfully observed.

7. Such agreements should contain provision for prompt and final interpretation in the event of controversy regarding meaning or application.

8. Wages should be adjusted with due regard to the purchasing power of the wage and to the right of every man to an opportunity to earn a living at fair wages, to reasonable hours of work and working conditions, to a decent home, and to the enjoyment of proper social conditions.

9. Fixing of a basic day as a device for increasing compensation is a subterfuge that should be condemned.

10. Efficient production in conjunction with adequate wages is essential to successful industry. Arbitrary restriction on output below reasonable standards is harmful to the interests of wage earners, employers and the public, and should not be permitted. Industry, efficiency and initiative, wherever found, should be encouraged and adequately rewarded, while indolence and indifference should be condemned.

11. Consideration of reduction in wages should not be reached until possibility of reduction of costs in all other directions has been exhausted.

12. Administration of employment and management of labor should be recognized as a distinct and important function of management and accorded its proper responsibility in administrative organization.

13. A system of national employment offices, with due provision for cooperation with existing state and municipal systems, can be made, under efficient management, and if conducted with due regard to the equal interests of employers and employees in its proper administration, a most helpful agency, but only if all appointments are made strictly subject to the Civil Service law and rules. Policies governing the conduct of a national system of employment offices should be determined in conjunction with advisory boards—national, state and local—equally representative of employers and employees.

The committee included in its report only the principles of industrial relations which it recommends. As is usual in the procedure of the Chamber, however, there have been placed in the pamphlet used for a referendum vote on the report outlines of considerations which organizations in the Chamber's membership may wish to bear in mind when they decide to vote for or against any of the principles as follows:

I

Conduct of Industry

FOR—The proposition states a fundamental point of view which all business management should have. The management of an enterprise may recognize in proper instances a positive duty to strive to have the enterprise earn means to increase compensation to workmen or better their conditions in other ways quite as clearly as it recognizes a duty to make the enterprise successful for the owners. Owners and workmen, of course, share responsibility with the management. According to this point of view, competition should not be the governing factor in determination of wages. It should be modified by due consideration of all persons dependent on an industry as a source of livelihood.

AGAINST—The proposition may err since it deals only with the interests of participants in an industry and does not provide for consideration of the public interest. Freedom for individuals to obtain the compensation to which their abilities entitle them has been maintained through competition. From this point of view, competition alone can bring about the proper adjustments in a complex economic structure and alone can cure the abnormal conditions resulting from war. If workers are at a disadvantage in disposing of their services by competition the remedy should be through legislation and not in a principle which might embody industrial paternalism.

II

Adjustment of Disputes

FOR—Methods of force exerted by either side to a controversy result in social and industrial unrest. Prevention of these causes of unrest accords with all the ideals of democracy. Their prevention also saves both direct and indirect material loss to participants and to the public.

AGAINST—There is a possible difficulty in concrete application of such a principle. An employer, finding that his workmen are disposed to disregard his limitations with respect to cost of production, might wish to cease operation until he could find new employees who would work on a basis that would permit successful operation of his plant. And employees who normally are not prepared to go to distant localities to seek work are reluctant to abandon freedom to strike when they see in it the only immediate means of obtaining what they are seeking. Most attempts to do away altogether with strikes and lockouts have failed.

III

Regularity and Continuity

FOR—Two problems are involved here. Unemployment which results from fluctuation arising from conditions that affect individual industries or groups of industries, such as seasonal industries, represents disadvantages both to employers and employees, to the latter because it reduces the earning capacity, and to the former because the industry has to provide production capacity to carry the peak of the load. Continuity of employment, which means the prevention of unnecessary and undesirable labor turnover, eliminates a very large amount of economic waste.

AGAINST—While desirable, regularity and continuity of employment may not be generally obtainable in many industries. Regularity often is affected by such uncontrollable factors as the weather. As to continuity, there may be a question whether employees will not in the long run find best opportunity to develop their abilities if they follow their own choice as to when they shall change their jobs.

IV

Right to Organize

FOR—That all elements and parts of the community should be treated equally, and that they should have the same right to organize, is a proposition fundamental to American law. The circumstance that an organization might abuse its power is not an argument against the right to organize but rather a reason for legislative action to prevent such abuses. Organization in formal or informal manner is inevitable.

AGAINST—A statement of the right of workers to organize should be preceded by formulation of methods by which abuses of organization detrimental to the public interest may be prevented. While formulation of such methods might be difficult it may not justify departure from such an order of events.

V

Adequate Representation

FOR—Representation goes far towards preventing ill-will, unrest, hostility, and withholding of effort on the part

cally in a constant amount to two magnetic rolls, where all the small pieces of iron, which have been through the crusher, are removed and chuted to a concrete collecting bin for return to the steel plant.

Screening Plant

The crushed slag passing the rolls is fed to screens adjacent to them. These first screens are mounted on parallel shafts and each is driven by a direct-connected electric motor. The speed reduction gears and the drive gears are completely enclosed in steel-box guards, as shown in the accompanying views.

These screens are 26 ft. long and 5 ft. in diameter with ¾-in. perforated dust jackets on the upper halves. The screen plates are perforated to remove four sizes of material as follows: No. 1 (4 to 2½-in.); No. 2 (2½ to 1½-in.); No. 3 (1½ to ¾-in.); No. 5 (¾-in. to dust). The No. 5 (¾-in. to dust) material passes through two vertical chutes at the head of the screens to the floor below, where there are two smaller screens.

The lower screens are placed end to end (with the feeding spouts between) and are at right angles to the pair of large screens above. The two smaller screens which are 16 ft. long by 4 ft. in diameter are also driven by individual direct-connected electric motors.

The smaller screens separate the No. 5 material (¾-in. to dust) into three sizes as follows: No. 4 (¾ to ¼-in); No. 6 (½ to ¼-in.); No. 7 (¼-in. to dust).

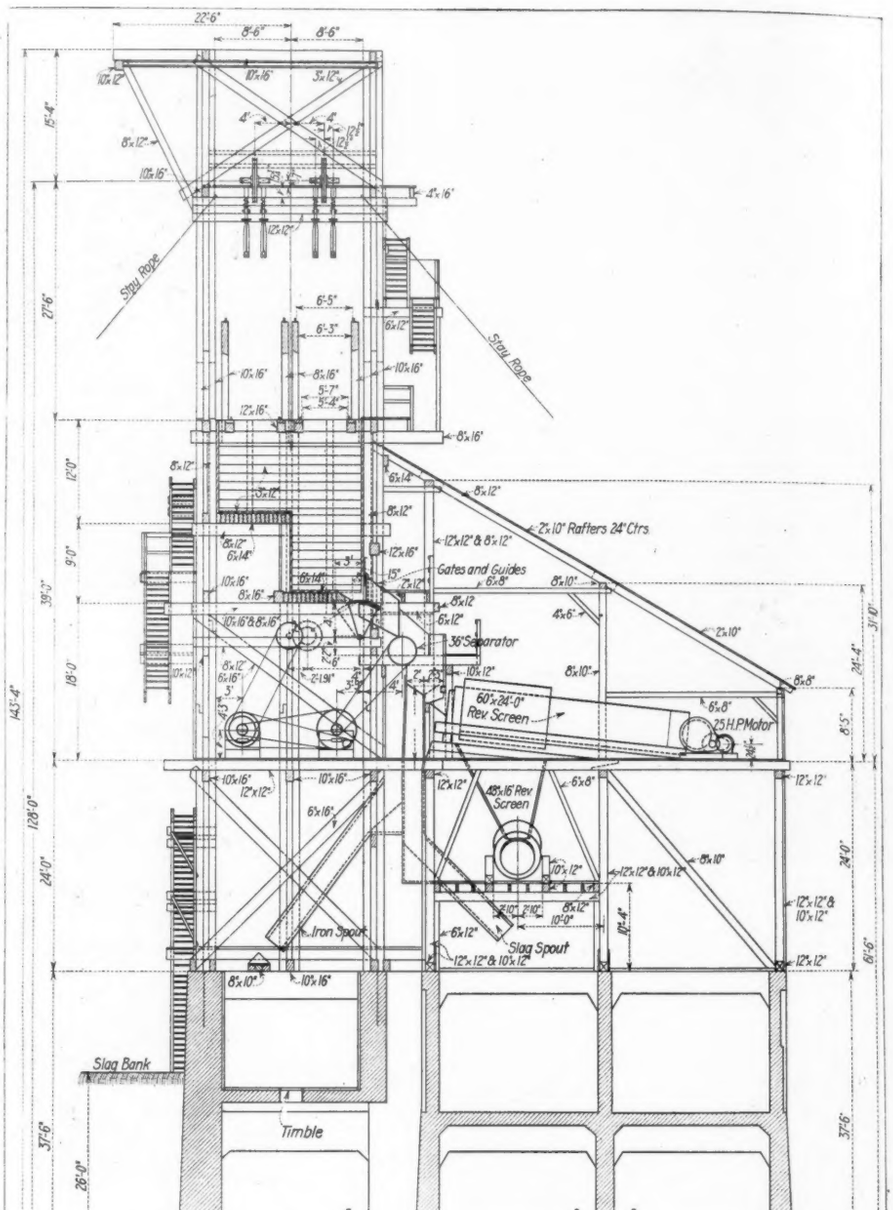
The screening plant is designed so that it can be operated for a maximum capacity of 2,000 tons per day by using only one large and one small screen, or for a maximum capacity of 4,000 tons per day by using both pairs of screens. The large screen rejections are returned to the crusher by a gravity chute.

Storage and Loading Facilities

The screened slag flows by gravity through chutes into concrete storage bins, which have a combined capacity of 1,500 tons. By shifting the chutes two or more sizes can be mixed and shipped on short notice.

Two loading tracks are provided under the slag bins (one is under the iron bin). The bins are emptied through balanced segmental gates, 30x32-in., operated by levers from elevated platforms.

The cars as they are being loaded stand on 75-ft. track scales, which permits accurate loading to orders and saves much delay and annoyance in making shipments. This feature of the plant is considered one of its best, for much time and money was formerly lost in waiting for the railway company to take the cars to its scales, and then often times the slag company was compelled to remove 5 or 6 tons overload with the cars at some out-of-the-way place.



Cross-section showing screen arrangement

To further facilitate deliveries soon after the cars are loaded they are delivered by the slag company's own locomotives to any of the nine railway lines serving the Birmingham district.

Slag Reserve Supply

Although the crushing and screening plant is designed to handle the entire daily output of the blast furnaces, it is not dependent on the operation of the furnaces for its supply of raw material. About a mile from the slag plant is a dump estimated to contain from 10,000,000 to 15,000,000 tons of old slag.

The slag company owns and operates a standard-gauge railway to this dump, which as the accompanying views show, closely resembles a quarry working. The face is 25 or 30 ft. or more high and is drilled with well drills and blasted as in any limestone quarry.

The Birmingham Slag Co. has had its product thoroughly tested as a concrete aggregate and has advertised its wares in thoroughly up-to-date fashion. Shipments are made to points in Mississippi, Alabama, Georgia and Florida. A large part of the output is used in road and pavement work.

Comprehensive Analysis of Labor Problem

Thirteen Principles Put Forward by Committee of the Chamber of Commerce

A STATEMENT OF PRINCIPLES of industrial relations, prepared with a view to furnishing a basis on which American industry can build a national labor program, was submitted April 16 to a referendum vote of the membership of the Chamber of Commerce of the United States. The principles, thirteen in number, were prepared by a special committee of the Chamber after a long period of study of the entire subject of industrial relations. They are:

1. Industrial enterprise, as a source of livelihood for both employer and employee, should be so conducted that due consideration is given to the situation of all persons dependent upon it.

2. The public interest requires adjustment of industrial relations by peaceful methods.

3. Regularity and continuity of employment should be sought to the fullest extent possible and constitute a responsibility resting alike upon employers, wage earners, and the public.

4. The right of workers to organize is as clearly recognized as that of any other element or part of the community.

5. Industrial harmony and prosperity will be most effectually promoted by adequate representation of the parties in interest. Existing forms of representation should be carefully studied and availed of in so far as they may be found to have merit and are adaptable to the peculiar conditions in the various industries.

6. Whenever agreements are made with respect to industrial relations they should be faithfully observed.

7. Such agreements should contain provision for prompt and final interpretation in the event of controversy regarding meaning or application.

8. Wages should be adjusted with due regard to the purchasing power of the wage and to the right of every man to an opportunity to earn a living at fair wages, to reasonable hours of work and working conditions, to a decent home, and to the enjoyment of proper social conditions.

9. Fixing of a basic day as a device for increasing compensation is a subterfuge that should be condemned.

10. Efficient production in conjunction with adequate wages is essential to successful industry. Arbitrary restriction on output below reasonable standards is harmful to the interests of wage earners, employers and the public, and should not be permitted. Industry, efficiency and initiative, wherever found, should be encouraged and adequately rewarded, while indolence and indifference should be condemned.

11. Consideration of reduction in wages should not be reached until possibility of reduction of costs in all other directions has been exhausted.

12. Administration of employment and management of labor should be recognized as a distinct and important function of management and accorded its proper responsibility in administrative organization.

13. A system of national employment offices, with due provision for cooperation with existing state and municipal systems, can be made, under efficient management, and if conducted with due regard to the equal interests of employers and employees in its proper administration, a most helpful agency, but only if all appointments are made strictly subject to the Civil Service law and rules. Policies governing the conduct of a national system of employment offices should be determined in conjunction with advisory boards—national, state and local—equally representative of employers and employees.

The committee included in its report only the principles of industrial relations which it recommends. As is usual in the procedure of the Chamber, however, there have been placed in the pamphlet used for a referendum vote on the report outlines of considerations which organizations in the Chamber's membership may wish to bear in mind when they decide to vote for or against any of the principles as follows:

I

Conduct of Industry

FOR—The proposition states a fundamental point of view which all business management should have. The management of an enterprise may recognize in proper instances a positive duty to strive to have the enterprise earn means to increase compensation to workmen or better their conditions in other ways quite as clearly as it recognizes a duty to make the enterprise successful for the owners. Owners and workmen, of course, share responsibility with the management. According to this point of view, competition should not be the governing factor in determination of wages. It should be modified by due consideration of all persons dependent on an industry as a source of livelihood.

AGAINST—The proposition may err since it deals only with the interests of participants in an industry and does not provide for consideration of the public interest. Freedom for individuals to obtain the compensation to which their abilities entitle them has been maintained through competition. From this point of view, competition alone can bring about the proper adjustments in a complex economic structure and alone can cure the abnormal conditions resulting from war. If workers are at a disadvantage in disposing of their services by competition the remedy should be through legislation and not in a principle which might embody industrial paternalism.

II

Adjustment of Disputes

FOR—Methods of force exerted by either side to a controversy result in social and industrial unrest. Prevention of these causes of unrest accords with all the ideals of democracy. Their prevention also saves both direct and indirect material loss to participants and to the public.

AGAINST—There is a possible difficulty in concrete application of such a principle. An employer, finding that his workmen are disposed to disregard his limitations with respect to cost of production, might wish to cease operation until he could find new employees who would work on a basis that would permit successful operation of his plant. And employees who normally are not prepared to go to distant localities to seek work are reluctant to abandon freedom to strike when they see in it the only immediate means of obtaining what they are seeking. Most attempts to do away altogether with strikes and lockouts have failed.

III

Regularity and Continuity

FOR—Two problems are involved here. Unemployment which results from fluctuation arising from conditions that affect individual industries or groups of industries, such as seasonal industries, represents disadvantages both to employers and employees, to the latter because it reduces the earning capacity, and to the former because the industry has to provide production capacity to carry the peak of the load. Continuity of employment, which means the prevention of unnecessary and undesirable labor turnover, eliminates a very large amount of economic waste.

AGAINST—While desirable, regularity and continuity of employment may not be generally obtainable in many industries. Regularity often is affected by such uncontrollable factors as the weather. As to continuity, there may be a question whether employees will not in the long run find best opportunity to develop their abilities if they follow their own choice as to when they shall change their jobs.

IV

Right to Organize

FOR—That all elements and parts of the community should be treated equally, and that they should have the same right to organize, is a proposition fundamental to American law. The circumstance that an organization might abuse its power is not an argument against the right to organize but rather a reason for legislative action to prevent such abuses. Organization in formal or informal manner is inevitable.

AGAINST—A statement of the right of workers to organize should be preceded by formulation of methods by which abuses of organization detrimental to the public interest may be prevented. While formulation of such methods might be difficult it may not justify departure from such an order of events.

V

Adequate Representation

FOR—Representation goes far towards preventing ill-will, unrest, hostility, and withholding of effort on the part

of participiants in industry. Representation and adequate discussion removes dissatisfaction where this dissatisfaction arises, not because of conditions in an industry, but because participants have no say in making conditions.

AGAINST—It is questionable if any form of representation can take the place of enlightened and efficient management. Any representation which shifts the responsibility of the management decreases the efficiency of management upon which all participants in industry rely for the promotion of their interests. The line of development should be toward better management. In some industries representation is hard to get, as illustrated in those which employ large numbers of unskilled workers. Representation must provide advice, suggestions and discussions with an understanding of problems involved and experience with the point of view of management. Representation implies a degree of equality among participants in discussion as to knowledge of the things to be discussed.

VI

Observance of Agreements

FOR—Unless there is faithful observance of agreements that may be made, conditions of uncertainty arise, dissatisfaction follows and there is loss in efficiency. Faithful observance is essential to the stability necessary in the interest of all participants in industry and the public.

AGAINST—To say that agreements if made should be faithfully observed may not be enough. Agreements reached in collective bargaining regarding industrial relations are not contracts in the regular sense. They merely are statements of the usage that is to prevail, of methods of dealing to be followed by persons engaged in a trade. Consequently, any means of enforcing agreements might deprive individuals of liberty to make their own contracts.

VII

Provisions for Interpretation

FOR—Insertion in an agreement of provisions having to do with means used for settlement of a controversy is an efficient way of preventing misunderstanding from arising. Such provisions should determine in advance all details possible to foresee and in so far as possible should come into operation automatically when a dispute arises. Much of the recent progress in settling industrial disputes has been in accordance with this principle.

AGAINST—To insertion in any agreements made of provisions for interpretation in the event of controversy ordinarily there may be no objection except that elaboration of such provisions may delay conclusion of an agreement on points of more immediate importance and, further, the existence of such provisions may tend to give undue prominence to relatively unimportant questions which otherwise would not arise.

VIII

Adjustment of Wages to Conditions

FOR—Adjustment of wages as recommended would place the wage standard upon an equality with the American standard of living. Compensation which does not permit the recipient to have a part in the life of the typical American community means immediate public detriment as it creates an element that is apart from the rest of the community and it may also mean an eventual public charge for the maintenance of persons rendered incompetent for any industrial service through the inadequacy of wages. Industries are dependent for stability and permanence upon contented workers. Again, wide markets are essential to industrial success where industrial achievement is in great output at low cost. Such markets are created by workers as consumers. The purchasing power of wages should not be impaired.

AGAINST—Determination of what is a living wage is no easy matter. The living wage is not by any means a universal standard. In the United States a living wage might vary considerably when there is taken into account the dissimilarities in race so marked as between negroes and whites and by variations in the living standard by immigrants from other lands. High wages depend fundamentally upon effectiveness in the application of labor, upon the production of labor.

IX

Basic Day

FOR—A basic day is a measure of wages and usually a means for increasing wages. It is not a limitation upon hours of work. A basic eight-hour day does not mean an eight-hour work day but the wage is taken as due for eight hours of work and for further hours in the actual day overtime is paid. Under these conditions the social and other advantages usually ascribed to a short-hour work day are not sought.

AGAINST—In an occupation where, for example, a short-hour day has not for physical reasons of operation as yet been found possible ,it may be proper to take the first step toward an actual work day with fewer hours by stating such a day as the measure of wages for the day's work, with additional work to be paid for as overtime. In fact, the federal law respecting railroad employees has brought about an actual eight-hour day in railroad yards and in some instances for trains.

X

Efficient Production

FOR—Limitation upon production is not even logical in immediate self-interest for persons who seek wage adjustments or other remedies. In an even more fundamental way limitations have a detrimental effect upon workers by dulling the interest and zeal which follow successful work. Successful efforts develop intelligence and initiative, desirable qualities in members of a democracy. The declaration against limitation in production applies not only to employees but also to any employers who may restrict output as a method, for example, of keeping up prices.

AGAINST—Means have not yet been devised to insure to individual workers the advantages to them of increased production. Continued employment to the individual is often his most immediate concern. He often is so situated in industry that only a limited amount of work is to be done and any increase in efficiency may mean that some individuals engaged in the task will be discharged. Considerations such as these may lead to limitation on output. Again, limitations are sometimes said to be necessary from the workers' point of view to prevent "speeding up," which would be detrimental to health.

XI

Reduction in Wages

FOR—A fundamental argument for this proposition lies in the circumstance that the wage affects the human element in whose welfare and continued efficiency the whole community has an interest. Besides, reduction should begin in the largest factor of cost. In the United States the cost of materials for manufacturing is in the aggregate more than twice the cost of wages.

AGAINST—When prices are falling reduction in wages is equitable and inevitable when wages have advanced with rising prices. Wages fall with a decline in production. That the rate of wages is maintained does not mean a great deal since the work-time for employees decreases and their earnings therefore diminish. There has been a considerable decline in earnings since the armistice was signed, although rates of wages generally have been maintained.

XII

Administration of Employment

FOR—Many wastes can be prevented through concentration of expert and sympathetic attention upon problems of personnel in large establishments. These wastes include the costs to industry due to turnover in labor, wastage of materials and disorganization of routine and esprit de corps, the loss to industry of the training and experience of men who leave, losses to the public in production, losses to workers of opportunities to advance in accordance with skill and experience they have developed.

AGAINST—At best the movement for employment management is in an early stage and even the general trend of what will prove successful in certain parts of this field has not appeared. The movement still is a matter of propaganda; for the critical analysis which will develop such defects as may exist there has not been time. Employment management contains a possibility of error in development of a paternalistic attitude towards employees, undesirable because of its influence upon employers and employees.

XIII

National Employment Offices

FOR—The inadequacy of private employment agencies, the limitations upon facilities offered by labor organizations and employers' associations, and the possible need of a national system of employment exchanges to coordinate and supplement state and municipal agencies were set out in a report made by a committee of the National Chamber in 1916. The purpose of employment offices of the kind in question is to provide a centralizing agency to which employers will resort with confidence they can ascertain all possibilities of meeting their needs and to which persons desiring employment can go with equal certainty that they can learn of the opportunities that exist for them.

AGAINST—There are considerable difficulties about a proposal for federal employment offices of any kind in normal times. As a matter of administration it may be almost impossible to prevent local federal offices from departing from their proper functions of coordination and supplement and operating in such a way as to duplicate state and local public offices, thus introducing a degree of the confusion they are intended to prevent.

Oklahoma Portland Cement Co. Makes Extensive Improvements

Rebuilt Plant to Be Ready for Operation in June

EXTENSIVE CHANGES in the plant of the Oklahoma Portland Cement Co. at Ada, Okla., are described by a local newspaper man as follows:

"The buildings of the new plant stand apart from any used for similar purposes elsewhere, in that not a stick of wood is to be found in the construction, reinforced concrete being used from the basement floors to the roof of the big storage room. The engineers set a new mark in concrete construction in these buildings.

"Ample room is provided in the raw material storage building for freight cars to be backed in and the contents dumped in short order. A big traveling crane will distribute it properly. When filled this building will contain a month's supply of limestone and shale so that if anything prevents the usual run at the quarries the plant will still be able to go ahead for some time.

"The new kiln already in place is 10 ft. in diameter and 140 ft. in length. The foundation is down for another kiln of equal size which the company plans to install some time next year and a place is provided for a third one which will be put in two years hence.

Electric Drives Throughout

"A striking feature about the machinery is that there is not a driving belt in the entire plant and no shafting to speak of, everything being run independently by motors. Every possible means has been employed to prevent the necessity of closing down the entire plant because of a breakdown in any one machine. For example, the mixing kiln will be run by a 450 h. p. motor. Another motor will be kept in reserve and in case the one now in place gets out of order a traveling crane will remove it instanter and place the other to go ahead with the work. In another case coal is provided for instant use in the kiln in case the gas supply is cut off for any reason.

"This mill will employ the wet process, instead of the dry process in use in the old plant.

To Recover Potash

"In compliance with the urgent suggestion of the Government it will be arranged to save potash as a by-product. This tonic for farm lands will be caught in the dust that is blown from the burning kiln to the smokestack. It is estimated that on full capacity 9,000 lbs. of potassium sulphate will be saved daily and this will be just that much in breaking down the monopoly German had on the potash industry before the war.

"The plant will get power from the Oklahoma Power and Transmission Co. at Byng.

"The old plant will operate as at present until it is too badly worn to be profitable. When it was built twelve years ago it was the last word in cement mills, but since then the industry has made such rapid progress that it is far behind the most improved of today.

"The company is also beautifying the grounds, having leveled up several acres and having planted this in Bermuda grass and set out numerous roses and other flowers.

"One of the first things the present owners did was to erect a building where the employes can take a shower bath before going home and where they can eat their lunches in comfort. Each man is provided with a locker to store his clothing while at work. A new office building was also erected and this, too, is very commodious and well suited for the particular use for which it was intended."

Report Gives the Extent of German Interests in U. S. Cement Plants

WASHINGTON, D. C.—Details of German interests in the American cement industry are made public in the report of the former alien property custodian, A. Mitchell Palmer, covering the operations of his office during the year 1918. German agents, declared Mr. Palmer, looked upon the American industrial field as a particularly fertile one, and their investments were large and varied. It afforded them excellent means for sowing the seed of German propaganda, and at the same time gave them practically unlimited opportunities for collecting information, both commercial and military, for the use of the German government and its agents.

"In many of the large German-owned companies taken over by the alien property custodian after investigation," says the report, "it was found that espionage was one of the chief functions. Every scrap of information of commercial or military value to Germany was carefully gathered by the representatives of these concerns in this country and quickly forwarded to the home office in Germany. The German agents were particularly keen on gathering information that would be helpful to Germany's commercial warfare. Once in Germany, this information was carefully card-indexed for the use of German manufacturers, and bulletins of commercial information were also prepared and placed at their disposal.

"When, in 1916, the relations between the United States and Germany became strained and the war clouds began to gather, the managers of the German-owned concerns in this country became panic-stricken. The cables and the wireless stations were crowded with messages to and from the German owners and their managers in this country, scheming and plotting to arrange their affairs in such a manner as to keep the concerns from being taken over by the alien property custodian. Every conceivable sort of camouflage was resorted to; the flimsiest pretexts were used to transfer overnight corporations valued at millions of dollars. In a few instances, American lawyers joined with the German owners and their agents in their efforts to escape the provisions of the trading with the enemy act, and in some cases it required months of painstaking and persistent investigations to ferret out the enemy ownership."

While enemy interests were secured in only one or two concerns in the cement industry, these were leading concerns and their activities widespread. They were the Alsen's American Cement Works, in which the enemy interest was 100 per cent; the La Salle Portland Cement Co., in which the enemy interest was 88 per cent; the German-American Portland Cement Works, in which the enemy interest was 72 per cent.

Cement Company Saves Much Money Through Safety Methods

ST. LOUIS, MO.—A case of extraordinary efficiency in the prevention of industrial accidents is revealed in a recent report made by J. C. Josse, superintendent and safety engineer of the Continental Portland Cement Co. of St. Louis to the Central Mississippi Valley Division of the National Safety Council.

This report, according to Carl L. Smith, secretary of the division, shows that the cement company has paid a total of only $300 in accident claims during the last six months, whereas before the institution of organized safety work at the plant the company had paid an average of $1,800 a month in accident claims.

In recognition of his work in the safety movement, Mr. Josse has been appointed chairman of the Industrial Committee of the Central Mississippi Valley Division of the National Safety Council.

NEW MACHINERY AND EQUIPMENT

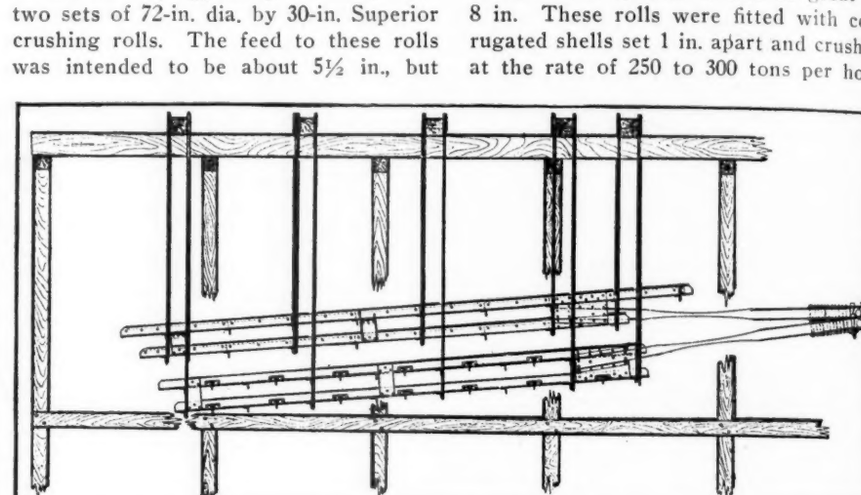
Crushing Rolls—Their Proper Place in Plant Equipment

By O. E. Thaleg
Chicago Representative of the Worthington Pump & Machinery Corp.

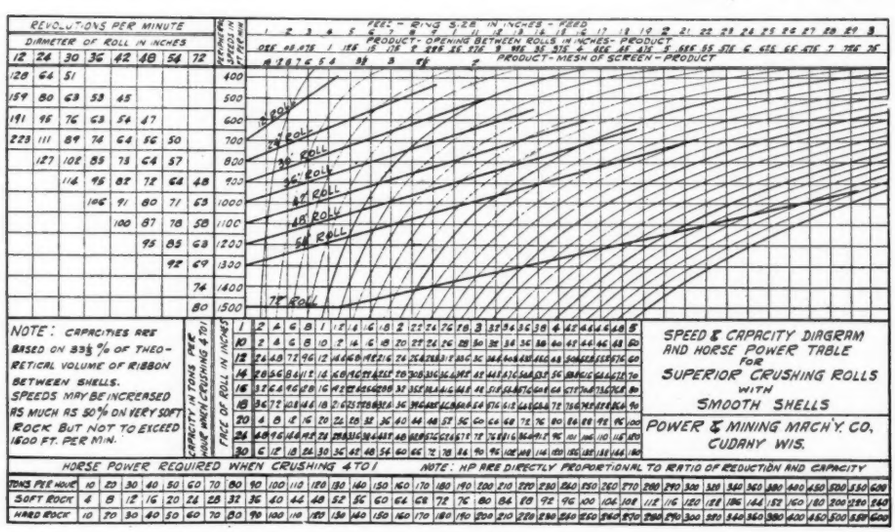
VERY FEW QUARRY OWNERS appreciate the advantages derived from the use of large-diameter crushing rolls. When properly used there is no type of secondary crusher that can equal them in large capacity, small amount of power per ton of material crushed and cheap maintenance.

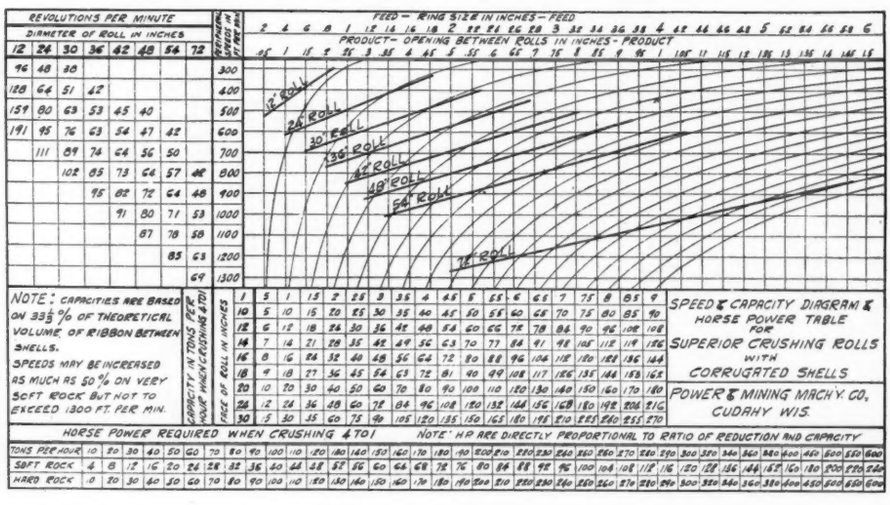
Within the past few years several of the more progressive stone producers have awakened to the advantages of rolls and have installed large units for work that had previously been done in a battery of small gyratory crushers.

In 1913 the Canada Crushed Stone Co. at Dundas, Ont., replaced a No. 7½ and a No. 8 gyratory, which were crushing the product from a double discharge 42-in. McCully gyratory crusher, with two sets of 72-in. dia. by 30-in. Superior crushing rolls. The feed to these rolls was intended to be about 5½ in., but due to the worn condition of the concaves in the crusher it was as great as 8 in. These rolls were fitted with corrugated shells set 1 in. apart and crushed at the rate of 250 to 300 tons per hour each. The product was 50% 1½ in. and smaller, the balance from 2 to 2½ in., with a very few flat pieces which might be called 3 in. ring stone.



New shaker screen with stiff hanger arms


SPEED & CAPACITY DIAGRAM AND HORSE POWER TABLE FOR SUPERIOR CRUSHING ROLLS WITH SMOOTH SHELLS
POWER & MINING MACH'Y. CO. CUDAHY WIS.
NOTE: CAPACITIES ARE BASED ON 33⅓ % OF THEORETICAL VOLUME OF RIBBON BETWEEN SHELLS. SPEEDS MAY BE INCREASED AS MUCH AS 50% ON VERY SOFT ROCK BUT NOT TO EXCEED 1600 FT. PER MIN.
HORSE POWER REQUIRED WHEN CRUSHING 4 TO 1
NOTE: HP ARE DIRECTLY PROPORTIONAL TO RATIO OF REDUCTION AND CAPACITY


SPEED & CAPACITY DIAGRAM & HORSE POWER TABLE FOR SUPERIOR CRUSHING ROLLS WITH CORRUGATED SHELLS
POWER & MINING MACH'Y. CO. CUDAHY WIS.
NOTE: CAPACITIES ARE BASED ON 33⅓ % OF THEORETICAL VOLUME OF RIBBON BETWEEN SHELLS. SPEEDS MAY BE INCREASED AS MUCH AS 50% ON VERY SOFT ROCK BUT NOT TO EXCEED 1300 FT. PER MIN.
HORSE POWER REQUIRED WHEN CRUSHING 4 TO 1
NOTE: HP ARE DIRECTLY PROPORTIONAL TO RATIO OF REDUCTION AND CAPACITY

Both rolls are driven from one countershaft which is belted to a 250-h.p. motor. The friction load of both rolls, including the line shaft, is about 22 h.p., the average crushing load is 99 h.p. and the maximum 154 h.p.

Another installation of large rolls was made at the plant of the Woodville Lime Products Company, Woodville, Ohio, in 1917. The product from a 60x48-in. jaw crusher, set to 8 in., was for a time run through a set of 72x30-in. Superior crushing rolls without preliminary screening. These rolls were designed to take the product that would pass through a 7-in. perforation and crush to 2 in., but as the lime plant was not ready to take the large material, everything that came from the crusher went to the rolls. These rolls were driven by a 150-h.p. motor and easily handled all the product produced by the large jaw crusher.

Since then a number of large stone producers have installed equipment of this type.

New Shaker Screen

THE ILLUSTRATION ABOVE shows a shaker screen recently put on the market by the Good Roads Machinery Co., Fort Wayne, Ind. Instead of pivoted rocker arms, the vibrations are controlled by plank hangers, which give a quicker, sharper movement.

General News From the Rock Products Markets

Extensive Building Work All Over Texas

AUSTIN, Texas—Notwithstanding the high price of building materials there are more new buildings being planned and erected in Texas than for several years. In all cities the spring building activity has started off surprisingly well. One of the outstanding features is the unusually large demand for residences of the better class. In Dallas there was recently incorporated the Dallas Housing Co. with a capital of $500,000 for the purpose of providing homes for new additions to the city's population. In all the towns of Central West Texas where producing oil fields are being developed phenomenal building progress is being made. Much difficulty is experienced in supplying materials for these towns on account of the congested traffic of the railroads. Crop conditions in Texas were never better at this time of the season.

Penn Builders & Supply Co. Buys Sand Dredging Firm's Equipment

PITTSBURGH, Pa.—The entire sand, gravel and contractors' equipment of the Clifton Brothers Contracting Co., of Zanesville, O., was sold last month through brokers to the Penn Builders and Supply Co. of Tarentum, Pa. The property consists of a towboat, supply boat, boot jack dredge, sand and gravel digger, dump scow, ten sand barges and contractors' equipment.

The Penn Builders and Supply Co. is composed of merchants from the Allegheny Valley. Charles E. Craig of Tarentum is general manager. Dredging operations in the Allegheny River will be started as soon as the craft are put into condition for operation.

Cement Association Opens Des Moines Office

EFFECTIVE April 1, 1919, the Portland Cement Association announces the opening of a new district office of the Association at Des Moines, Iowa, Room 404 Hubbell Building, 9th and Walnut streets, with L. R. MacKenzie as District Engineer in charge.

Mr. MacKenzie recently held the rank of Captain and Engineer of Roads on the staff of the Commanding General of the Port of Embarkation at Newport News, Va., and has been identified with road work for twelve years in the middle west and on the Pacific Coast, both as engineer and contractor. He is an associate member of the American Society of Civil Engineers.

Potash Producers Organize National Association

DENVER, Colo.—Representatives of twenty-one potash-producing companies meeting here April 3, organized the National Association of Potash Producers and discussed plans for making the United States independent of Germany in this industry. The meeting was said to represent 95 per cent of the potash industry of the country.

Speakers said that in two years time, if the industry were protected from German competition, the American industry could produce a surplus and furnish America with an independent supply of potash.

Let's Hope So, Notwithstanding the Politicians

GRAVEL and sand, gravel and sand,
The song of the mixer
Is heard in the land.
It's more than a song
Of sand, stone and gravel;
It's a song of the highways
On which man will travel;
It's a song of foundations,
Of factory and home,
To carry the load
Of roof and of dome.

THERE'S more to its song
Than stone, gravel and sand;
It means that prosperity
Here in our land
Will shower her favors
On more than a few,
And they'll come through the mixer
To me and to you.

E. G. BROWN,
Janesville Sand & Gravel Co.,
Janesville, Wis.

Plan Biggest Gypsum Plant in World for New Mexico

ALAMOGORDO, N. M.—It is announced by E. W. Hartman, vice president and general manager of the Universal Gypsum Corporation of Alamogordo and Buffalo, N. Y., that that company has adopted plans for the construction of the largest gypsum manufacturing plant in the world. It will be located either at Alamogordo or Valmont, N. M., he said.

"We shall employ more than 1,000 men," Mr. Hartman said. "We are fortunate in having the largest deposit of white sand in the world in the Tularosa Basin. We estimate there are more than ten billion tons of the gypsum in the white sands which we control. The deposit is 85 feet deep and 45 square miles in area. We expect to construct a railroad from the deposit to our plant on the El Paso and Southwestern road, either at Valmont or Alamogordo, depending on which place seems suitable.

"The engineers now are preparing the plans for the factory, but these plans will be held in abeyance until we sink two deep test wells for oil. We want to know whether we shall use oil, gas or coal, and of course the use of fuel is the first item of importance in the success of the enterprise. We have plenty of coal near, but the test wells will show whether we have oil and gas, and since eight geologists have informed us we have the best chance for striking oil in great quantities, we have made an appropriation of $100,000 to take care of the expense of drilling two deep wells."

Demand for Potash Will Increase, Says Canadian

OTTAWA, Ont.—Dr. W. J. Wilson of the Mines Branch, Ottawa, addressed the Society of Chemical Industry at the Engineers' Club on the Potash Supply March 31. Dr. Wilson referred to the 14 cement plants in the United States, where special plants had been erected for the recovery of potash. The plant at Salt Lake City, Utah, claimed an efficiency of 95 per cent by the spray method. The average of recovery by the electric method was 40 per cent. He declared that the future of the potash market was uncertain, but that the demand for potash as a fertilizer would surely increase. The soils of Manitoba had shown a decided decrease in crops where fertilizing had been neglected.

Two Michigan Gravel-Sand Companies Combine

SAGINAW, Mich.—The Federal Sand & Gravel Co., capitalized at $150,000, has been organized to succeed and combine the Huron Shore and Marquette Gravel companies, the Emerson pit of the D. & M. railroad, and act as local representative of the Crescent Gravel Co. of Hersey, Mich. The office of the Federal company is in Saginaw.

The officers are: President, C. W. Luce, East Tawas; vice-president and general manager, John S. Porter; treasurer, S. S. Roby; secretary, Leet Denton; assistant secretary, Miss Olive Owens. The officers of the company are in Saginaw.

Jno. S. Porter, vice-president and general manager, is a member of the Executive Committee of the National Association of Sand and Gravel Producers, and secretary-treasurer of the Michigan Sand & Gravel Producers' Association.

Patents in the Lime Industry to Be Collated by Lime Association

THE CHEMICAL BUREAU of the Lime Association, Washington, D. C., announces that it will collect and abstract descriptions of patents relating to chemical processes of interest to lime manufacturers. The weekly letter of the Association of March 14 contains the following:

"On July 16, 1918, a patent was issued assigned to Mitchell & Grenelle No. 1,273,110, covering a process of separating magnesium oxide to be used in the manufacture of a refractory from a mixture of magnesium and calcium carbonate commonly called dolomitic rock. The ground rock is charged into a tube mill set into a furnace and heated externally to about 950°F. at which temperature the carbon dioxide is driven off from the magnesium carbonate, but which is too low to decompose the calcium carbonate. During calcination the material is finally ground, thus separating the minute particles of maknesite and calcite. After calcination the calcite remains in its original shape, crystalline and compact, while the magnesite has been converted into magnesium oxide, a powdery light material. Separation of these two materials is then effected by gravity concentrators.

"On July 2, 1918, a patent No. 1,270,-819, assigned to A. S. Davidson Co., was issued. This patent covers a method for making artificial magnesite, which is claimed to have the desirable qualities of imported crude magnesite. The product is made from dolomite rock, heated in a rotary kiln so as to remove all of the carbon dioxide without "dead burning." The calcine is granulated to the size of a pea and leached with cold water to reduce the calcium oxide down to from 3% to 1%.

"On May 28, 1918, S. B. Newbury of Cleveland, Ohio, was granted patent No. 1,267,686 covering a method of burning dolomitic limestone for the preparation of a refractory material that will not air slake. He takes dolomitic limestone, as free as possible from silica. He wet grinds to 100 mesh, together with 2% to 5% of boxsite iron ore or some substance containing oxides of the aluminum iron group. The slurry is burned at from 2700 to 3000°F. in a cement kiln. The resulting clinker is crushed to the required size for sale or for the formation of refractory brick.

"Copies of patents may be obtained from U. S. Patent Office at a uniform charge of 5 cents per copy. The Chemical Bureau will endeavor to keep the industry posted from time to time as to patents being issued by the Government that bear upon the lime industry, and should any member companies desire copies of the various patents, we should be glad to attend to the details of ordering them upon receipt of request accompanied by remittance to cover the Government fee."

Cement Prices Likely to Advance

Lehigh Official Predicts 10 to 15 Per Cent Advance This Season

CEMENT PRICES WILL ADVANCE 10 or 15 per cent this year, according to Albert Y. Gowen, vice president of the Lehigh Portland Cement Co., who testified recently before the Illinois legislative price investigating committee.

This company has thirteen plants in the United States, with head offices at Allentown, Pa. It has an invested capital of $24,488,000. Last year the company made a little under 6 per cent on this capital. Dividends were 4 per cent.

In 1913, Mr. Gowen testified, the average cost of making cement was 62 cents a barrel. The average net selling price was 82 cents. In 1918 the cost was $1.44 a barrel and the net price received $1.62.

Mr. Gowen said there was no chance of the 1918 price being lowered, but that in order to get a fair return on invested capital the company should ask more.

State Engineers' Estimate

Chairman Dailey of the committee read from a report made last January to Governor Lowden by a committee of engineers. This report went into the details of the cost of manufacturing cement in Illinois. The figure arrived at by the engineers was $1.25 a barrel.

"That is the difference between theory and actual practice," said Mr. Gowen. No two engineers in the country are able to tell what the cost of manufacturing cement is. If this plant could be made to run 365 days a year at maximum capacity and labor and coal should come down, then the cost might approximate $1.25. But we have not been able to get it down there.

"I think the cost of manufacture this year will be about $1.50 a barrel."

Chairman Dailey said:

"The state has great improvements to make. Contracts are waiting. With the plants running at full capacity, wages not lowered, fuel remaining about the same, is there any assurance you can give the public promise of a lower price for cement this year?"

Wants 10 Per Cent Profit

"The actual cost is based on labor and fuel and overhead expenses," replied Mr. Gowen. "The cost of $1.45 a barrel last year will not be reduced. I think it will be advanced. I think we should have 10 per cent dividends, 5 per cent for depreciation, and 5 per cent surplus on $24,000,000."—Report in Chicago "Tribune."

Seven Cement Men Receive Degree of Safety

ST. LOUIS, Mo., April 3—Seven members of the rock products industry at St. Louis received the degree of Supervisor of Safety last week on their graduation from the School of Safety Engineers conducted at St. Louis by the Central Mississippi Valley Division of the National Safety Council.

The course, which included fourteen lessons on the prevention of industrial accidents, was the first of its kind to be given in the country. Those who represented the rock products industries at the school were:

J. C. Josse, General Superintendent; A. R. Gardner, Chief Electrician; F. R. Loveridge, Assistant Superintendent; C. D. Merritt, Engineer, all of Continental Portland Cement Co. Geo. Ross, Superintendent; D. N. Armstrong, General Manager; Chas. Montgomery, of the Missouri Portland Cement Co.

Two Cement Companies of Canada Merge

VICTORIA, B. C.—R. P. Butchart, managing director of the Vancouver Portland Cement Co., Ltd., recently returned to Victoria after carrying on important negotiations with the London (England) interests connected with The Associated Cement Co. (Canada) Ltd. It is announced that arrangements were concluded for the amalgamation of the Vancouver company with the English concern and that the two companies have been consolidated under the name of the British Columbia Cement Co., Ltd. Mr. Butchart has been appointed president and managing director of the new company and the other directors are H. A. Ross and Edwin Tomlin of Victoria, C. St. Leger Brookman of London, Eng., and E. R. Wood of Toronto.

Offices are in Victoria, B. C.

Building Concrete Boat for U. S. in Mobile

MOBILE, Ala.—The pouring of concrete for the first government 1,500 ton concrete steamer at the plant of the Fred T. Ley Co. was begun in earnest here March 1. The company announced that the first vessel of this kind will be launched the latter part of April.

General News From the Rock Products Markets

Concrete Supplants All Other Material for Washington Thoroughfares

WASHINGTON, D. C.—Approximately $600,000 is to be spent by the District of Columbia during 1919 for street improvements which were held up by the war.

The average work done on the streets of Washington costs about $400,000 a year. It is planned to do three years' work in two, however, so that the street program of the District will be up to date by 1921. This will mean the expenditure of $600,000 during 1919, and a like amount next year. Contracts aggregating $300,000 have already been let, for work which is to be completed before next fall.

The use of concrete on the streets of Washington is fast supplanting that of other materials. Maryland suburbs adjoining Washington have for some years been using cement for their streets, with such success that the District has adopted the concrete roadway for many of its new thoroughfares.

Of the contracts awarded about $125,000 will be for concrete work, most of which will be done by the Continental Contracting Co., of Baltimore.

Virginia Has Ambitious Road Program

WASHINGTON, D. C.—A road building program for the State of Virginia will be planned by a board which has just been apointed by Governor Davis, headed by Harry Frazier, of Richmond, considered one of the ablest consulting engineers in the State, and consisting of Thomas S. Winston, of Midlothian, a member of Winston & Company, contractors, of Richmond; Senator J. E. West, of Suffolk, a member of the senate committee on roads; Homer L. Ferguson, of Newport News, president and general manager of the Newport News Shipbuilding & Drydock Company; Fairfax Harrison, of Belvoir, president of the Southern Railway; Wade H. Massie, of Washington, Va., and C. L. Bentley, of Roanoke.

The State now has available, for use during the year ending February 29, 1920, approximately $4,000,000 for road construction and maintenance. Matching the Federal aid money available for roads within the State during the three years 1919-1921, there will be an additional $10,000,000 to be spent on the highways. In addition to this, the Government has advocated the adoption of a very extensive road building program, which would call for the expenditure of $40,000,000 in a period of nine years.

It is understood that Governor Davis has created the board in order to bring to the assistance of the State the best engineering and business ability in Virginia in solving the roads problem. One of the important planks upon which the Governor has stood calls for a system of modern, substantial highways, and he has repeatedly declared his desire that the State get real roads for their money—roads built on the ground and not on paper. It is possible that an extra session of the State legislature may be called to hasten road construction, but this step will not be taken unless absolutely necessary and, in any event, not until all plans have been completed for immediate inauguration of the actual construction work.

Illinois Price Inquiry Ends Like a Bubble

THE SPECIAL COMMITTEE of the Illinois Legislature, which started out several weeks ago to determine the cause of the high cost of building materials, concluded its sessions in Chicago on April 19.

Chairman John Dailey of Peoria is quoted as saying that the committee would not send any one to New York April 25 to protest against the confirmation of the sale of the enemy owned stock of the La Salle Portland Cement Co. The Sandusky Cement Co. is the highest bidder for this stock and early in its investigation the committee wired the alien property custodian asking that confirmation of the sale he withheld pending investigation of a possible price combine of the cement men.

No Combination Proved

The investigation has not proven that any such combination exists and the committee has no "case" to take to New York.

"We may have our suspicions concerning a combination," said Chairman Dailey, "but we have not proved it. We cannot go to New York and make effective protest with the kind of information we have."

As to the possibility of the committee investigation resulting in lowering of prices, Chairman Dailey would not hazard a guess.

"The manufacturers of cement, building stone, lumber, and brick have come in here with their cost sheets, all duly audited, and have made sworn statements showing that their profits are not excessive," he said. "Some of them have even lost money. I do not see what can be done in the face of this testimony."

State Manufactures

The committee report may recommend that the state enter into the manufacture of certain lines of building material. The resolution which called the committee into life made this a special point. They were asked to inquire into the practicability, feasibility, and desirability of the state engaging in preparing and manufacturing materials for state and public road building.

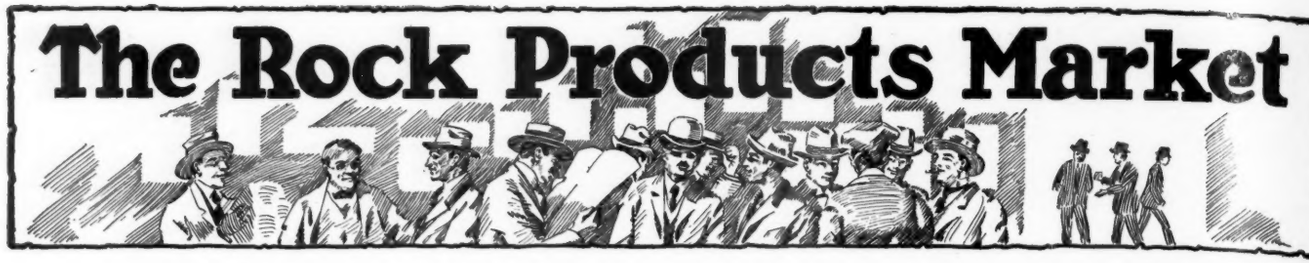
A report was made to Gov. Lowden by a special engineer that cement could be manufactured in this state for $1.25 a barrel. The figures presented to the committee by the Lehigh and Marquette cement companies denied this. The managers of these concerns said they could not manufacture for this price. The committee may decide that if the state engineer can save 40 or 50 cents a barrel in cement he should be given the chance. Weight is given to this report by the fact that the man who made it was under the impression that a real plant was to be built and that he was to be made manager, according to the Chicago "Tribune."

Schaffer Engineering and Equipment Co. Moves to Pittsburgh

A BUSINESS ANNOUNCEMENT of much interest to the lime fraternity is the removal of the Schaffer Engineering and Equipment Co. from Tiffin, Ohio, to Pittsburgh, Penn. This company, of which John C. Schaffer is president, W. Crow, secretary, and Adelbert R. Keller, treasurer, entered the lime-plant building business only a few short years ago but already has to its credit several of the best known plants in the industry—the Woodville Lime Products Co., Woodville, Ohio, the Knickerbocker Lime Co., Pennsylvania, the Standard Lime & Stone Co., West Virginia, and one that is still in the making, the American Lime & Stone Co., Tyronne, Penn.

The invention of the Schaffer hydrator and the poidometer mark a distinctive epoch in the lime industry of the United States and further developments are promised which will be of interest to all lime producers. Their many friends will be glad to know that the business of these lime-plant engineers has expanded beyond the possibilities of a small Ohio city to those of the premier machinery manufacturing city of America.

The Rock Products Market



Agricultural Limestone Wholesale at Plant, per Ton

EASTERN:

Danbury, Conn.—(50% thru 100) Analysis, $CaCo_3$, 90%; $MgCo_3$, 5%; ppr., $4.50; bulk 2.75

Gasport, N. Y.—Analysis, $CaCo_3$, 97% —50% thru 100 mesh 2.00

Hillsville, Pa.—Analysis, $CaCo_3$, 85%; $MgCo_3$, 1½%—(70% thru 100 mesh) in 80 lb. ppr. bags, $4.50; bulk 3.00

Pownal, Vt.—(50% thru 100) Analysis, $CaCo_3$, 90%; $MgCo_3$, 5%; ppr., $4.50; bulk 2.75

Syracuse, N. Y.—Analysis, $CaCo_3$, 91.50%; $MgCo_3$ 3.16%—(100% thru 20 mesh; 95% thru 50; 68% thru 100); sacks, 3.75; bulk 2.25

Walford, Pa.—(70% thru 100 mesh; 90% thru 50 mesh; 50% thru 50 mesh; 100% thru 10 mesh; 50% thru 4 mesh) ppr. sack, 4.50; bulk.. 3.00

West Stockbridge, Mass.—(50% thru 100) Analysis, $CaCo_3$, 90%; $MgCo_3$, 5%; ppr., $4.50; bulk 2.75

CENTRAL:

Alton, Ill.—(Pulv. and 90% thru 50 mesh; 90% thru 4 mesh) Analysis, $CaCo_3$, 96%; $MgCo_3$, .75% 2.00

Bedford, Ind.—(90% thru 10 mesh) Analysis, $CaCo_3$, 98.5%; $MgCo_3$, 0.5% 1.75

Canton, O.—100% thru 10 mesh; 49% thru 100; 59% thru 50 ..... 3.00

Columbia, Ill., near East St. Louis —(⅛" down) ..... 1.25@1.80

Elmhurst, Ill. — (Analysis, $CaCo_3$, 35.73%; $MgCo_3$, 20.69%) ⅛ in. to dust ..... 1.00@1.25

Greencastle, Ind.—(50% thru 50 mesh) Analysis, $CaCo_3$, 98% 1.75

Lannon, Wis.—(90% thru 50 mesh) Analysis, 54%, $CaCo_3$; 44%, $MgCo_3$ 2.50

Marble Cliff, O.—(50% thru 100 mesh) Analysis, $CaCo_3$, 86%; $MgCo_3$, 8%.... 3.00

McCook, Ill.—(100% thru ¼" sieve; 78.12% thru No. 10; 53.29% thru No. 20; 38.14% thru No. 30; 26.04% thru No. 50; 16.27% thru No. 100) Analysis, $CaCo_3$, 54.10%; $MgCo_3$, 45.04% 1.00

Milltown, Ind.—Analysis, $CaCo_3$, 98% 1.50

Montrose, Ia.—(90% thru 100 mesh).. 1.25@1.35

Muskegon, Mich.—(90% thru 50 mesh) Analysis, $CaCo_3$, 53.35%; $MgCo_3$, 43.27% 2.50

Piqua, O.—(50% thru 100 mesh)..... 2.50@4.00

Rockford, Ill. — Analysis, $CaCo_3$, 53.75%; $MgCo_3$, 44.35% 1.25

Stolle, Ill. (near East St. Louis on I. C. R. R.)—(Thru ⅛" mesh) Analysis, $CaCo_3$, 89.61 to 89.91%; $MgCo_3$, 3.82% 1.50

Stone City, Ia.—(50% thru 100 mesh) Analysis, $CaCo_3$, 98% ..... .50

Toledo, O.—Analysis, $CaCo_3$, 52.72%; $MgCo_3$, 43%—(20% thru 100 mesh; 30% thru 50; 80% thru 100; 100% thru 5/32 screen) 1.80

Whitehill, Ill. — Analysis, $CaCo_3$, 96.12%; $MgCo_3$, 2.50%— 50% thru 100 mesh, bulk 1.50

SOUTHERN:

Cartersville, Ga.—All thru 100 mesh.... 3.00

Dittlinger, Tex. — Analysis, $CaCo_3$, 99.09%; $MgCo_3$, 40%.

90% thru 100 mesh 2.00

90% thru 4 mesh 1.00

Fletcher, N. C.—Analysis, $CaCo_3$, 75%; $MgCo_3$, 22%—(all thru 10 mesh; 50% thru 100 mesh)—100 lb. paper or 200 lb. burlap, $3.60; bulk 2.10

Grovania, Ga.—Analysis, $CaCo_3$, 95%; $MgCo_3$, none—50% thru 100 mesh.... 2.50@3.00

(Continued on next page.)

Wholesale Prices of Crushed Stone

Prices given are per ton. F. O. B., at producing plant or nearest shipping point

Crushed Limestone

City or shipping point	Screenings, ¼ inch down	½ inch and less	¾ inch and less	1½ inch and less	2½ inch and less	3 inch and larger
EASTERN:						
Auburn and Syracuse, N. Y.	.80	1.20	1.20	1.20	1.20	1.20
Buffalo, N. Y.	Railroad ballast, 1.00					
Burlington, Vt.	1.25, all sizes from stock piles.					
Grove, Md.	1.50	2.25	2.00@2.50	2.10	1.75	1.35
North Leroy and Akron, N. Y.	$1.00 for all sizes, including R. R. ballast					
Walford, Pa.		1.50	1.50	1.40	1.40	1.40
CENTRAL:						
Alden, Ia.	.40		1.00	1.00	1.00	1.00
Alton, Ill.	1.85		1.45	1.35		
Belvidere, Ill.	1.00 for any size produced					
Bettendorf, Ia.		1.35@1.50	1.35@1.50	1.35@1.50	(2300 lbs.)	
Detroit, Mich.	Various sizes $1.50 per net ton					
Dundas, Ont.	.60	1.05	1.05	1.05	.85	.85
Eden and Knowles, Wis.		.80		1.00	1.00	
Elmhurst, Ill.	80 for all sizes					
Greencastle, Ind.	.90@1.25	1.10	1.00	.90	.90	.90
Illinois, Southern	1.50	1.25	1.25	1.25	1.25	1.00
Kokomo, Ind.	Price range .90@1.00					
Lannon, Wis.	1.10 all sizes					
Lewisburg, O.	80@1.00		1.00@1.10	1.00	1.00	1.00
Lima, O.	1.10 for any size					
Linwood, Ia.	.60	1.05	1.00	.91	.91	1.00
Mankato, Minn.				1.50	1.25	
Mayville, Wis.	.75	1.00@1.35	1.00	1.00	1.00	1.00
McCook, Ill.	1.00	1.60	1.00	.80	.80	.70@ .80
Montrose, Ia.		1.10@1.15	1.10@1.15	1.00@1.10	1.00@1.10	
Oshkosh, Wis.	1.00 in all sizes, Blue Limestone					
River Rouge, Mich.	.80@1.00	1.15	1.15	1.15	1.15	1.15
Rockford, Ill.	1.25			1.25	1.25	1.25
Sheboygan, Wis.	1.00 for all sizes					
Sherman and Hamilton, Wis.	All sizes $1.00 per ton					
Stone City, Ia.	.50		(1-in. 1.40)	1.30	1.20	
Toledo, Ohio	1.60	1.80	1.80	1.80	1.70	1.70
Toronto, Can.	1.55	1.95	1.95	1.95	1.75	1.75
	These prices include 90c freight					
SOUTHERN:						
Brookville, Fla.	.50			2.50		
Cartersville, Ga.		1.85	1.75	1.65		1.55
Fort Springs, W. Va.	.75	1.00	2.00	1.50	1.40	
Linnville Falls, N. C.	All sizes, 1.35					
	Railway ballast 1.10 per cu. yd.					
Mascot, Tenn.		1.00@1.25				
Memphis Junction, Ky.	From 1.00 to 1.25, all sizes					
Winnfield, La.	.60		1.60	1.60	1.60	
WESTERN:						
Atchison, Kans.	.50			1.50	1.40	1.20‡
Dittlinger, Tex.			1.20	1.00	.90	
El Paso, Tex.	.90 for all sizes					
Kansas City, Mo.	.60	1.35	1.35	1.35	1.35	1.35

Crushed Trap Rock

City or shipping point	Screenings, ¼ inch down	½ inch and less	¾ inch and less	1½ inch and less	2½ inch and less	3 inch and larger
Birdsboro, Pa.—Trap	2.00	1.80	1.70	1.50	1.50	1.25
	Fine screenings, 1.25					
Branford, Conn.—Trap	.80	1.25	1.25	1.20	1.10	
Dresser Jct., Wis.	.50	1.25	1.25	1.10	1.00	.95
Duluth, Minn.—Trap	.75	1.40@1.50		1.10@1.35	1.10@1.15	
Farmington, Conn.—Trap	.80	.95	.95	.90		
Glen Mills, Pa.—Trap	1.00	1.40	1.70	1.55	1.40	1.40
Millington, N. J.—Trap	1.80	2.00	1.80	1.60		
Montrose, Ia.—Trap		1.10@1.20	1.10@1.25	1.05@1.10	1.00@1.10	
Morristown, N. J.—Trap	1.85	1.75	1.75	1.60	1.40	1.40
New Britain, Conn.—Trap	.80	1.40	1.35	1.30	1.10	
Richmond, Cal.—Trap	.50*		1.40*	1.30*		
Rock Hill, Pa.—Trap	1.20	1.40	1.60	1.50	1.40	1.40
	R. R. ballast 1.40					
Westfield, Mass.—Trap	.60	1 00	1.10	1.00	.90	

Miscellaneous Crushed Stone

City or shipping point	Screenings, ¼ inch down	½ inch and less	¾ inch and less	1½ inch and less	2½ inch and less	3 inch and larger
Brooksville, Fla.—Flint	1.00			2.50		
Fair Oaks, Calif.—Cr. Bldrs.	.85	1.05	.95	.85	.85	
Hendlers, Pa.—Quartzite	.80	1.00	1.25	1.00	1.00	1.00‖
Little Falls, N. Y.—Syenite	.80	1.20	1.40	1.20	1.20	1.20‖
Middlebrook, Mo.—Granite					2.00	1.00‡
Richmond, Va. (Quarry)	1.00@1.75	1.40@1.75	1.40@1.75	1.40@1.75	1.40@1.75	1.40
So. Richmond, Va.—Granite	1.00@1.25	1.25@1.75	1.40@1.75	1.40@1.75	1.40@1.50	1.40@1.50
Stockbridge, Ga.—Granite	.50	2.00	2.00	1.90	1.85	1.75
White Haven, Pa.—Sandstone	1.00	1.20	1.40	1.20	1.20	1.20

*Cubic yard. †Agrl. lime. ‖R. R. ballast. §Flux. ‡Rip-rap. a 3-inch and less.

Agricultural Limestone Wholesale at Plant, per Ton

(Continued from preceding page.)

Memphis Jct., Ky.—(Analysis, $CaCo_3$, 95.31%; $MgCo_3$, 1.12%) average price	2.00
Keystone, Ala.—(90% thru 50 mesh) Analysis, $CaCo_3$, 99.50%; $MgCo_3$, none	1.25
Mascot, Tenn.—Analysis, $CaCo_3$, 52%; $MgCo_3$, 38%.	
(90% thru 100 mesh)	2.50
(80% thru 200 mesh)	3.50
(All thru 10 mesh)	1.75
Paper bags, $1.50 extra per ton; burlap, $2.50 extra per ton.	
Tyrone, Ky.—Analysis, $CaCo_3$, 93%; $MgCo_3$, 4%—90% thru 4 mesh	1.50@2.25
Winnfield, La.—(50% thru 50 mesh)	4.50
WESTERN:	
Cement, Cal.—Analysis, $CaCo_3$, 95%; $MgCo_3$, 1% (50% thru 100 mesh)	4.00@5.00
Kansas City, Mo.—(50% thru 50 mesh)	1.10

Miscellaneous Sands per Ton at Plant

Silica sand is quoted washed, dried and screened, unless otherwise stated.

GLASS SAND:	
Bowmanstown, Pa.—Glass sand	2.50
Cedarville, N. J.—Glass	2.50@4.00
Gray Summit, Mo.—Glass	2.00@2.50
Hancock, Md.—Engine and glass	2.50
Klondike and Pacific, Mo.—Glass:	
Contracts	2.00
Carlots	2.50
Mapleton, Pa.—Glass, dry	2.75@3.00
Massillon, Ohio—Glass	3.00
Michigan City, Ind.—Glass sand	.30
Millington, Ill.—Glass	1.75@2.00
Mineral Ridge, O.—Glass	2.10@3.00
Montoursville, Pa.—Glass, green, washed	2.00@2.75
Ottawa, Ill.—Glass:	
Large contracts	1.75
All others	2.00@2.25
Sands, Elk Co., Pa.—Glass sand:	
Selected, green	2.50
Thayers, W. Va.—Glass	2.50@3.00
FOUNDRY SAND:	
Albany, N. Y., District—Molding	1.65@1.75
Core	1.25@1.50
Brass molding	1.65@1.75
Sand blast sand	3.25@3.75
Allentown, Pa.—Core	1.40@1.50
Bowmanstown, Pa.—Core	1.20
Molding, fine and coarse	1.50
Roofing pebble, washed	5.00
Cleveland, O.—Core, at pit	1.00@1.25
Cleveland, O.—Molding, delivered	2.70@2.95
Brick sand, at pit	.75
Brass molding, delivered	2.95
Delaware, N. J.—Molding	1.50@2.00
Franklin, Pa.—Brass molding	1.65
Molding (gray iron)	1.50
Gray Summit, Mo.—Molding	1.50@2.50
Hancock, Md.—Core and brass mldg.	1.65
Kansas City, Mo.—Core	.75
Klondike and Pacific, Mo.—Molding	1.50@2.50
Hellam, Pa.—Core	2.00
Mapleton, Pa.—Molding, fine and core, damp	2.50
Molding, fine, dry	3.00
Massillon, O.—Core; molding fine and coarse; traction	2.50
Furnace lining	3.00
Brass molding	1.50
Millington, Ill.—Core, furnace lining, damp	1.50
Roofing and stone sawing	2.00
Montoursville, Pa.—Core, molding fine, traction	1.25@2.00
Brass molding	1.50@2.25
Michigan City, Ind.—Core, bank	.30@ .40
Ohio—Various points:	
Fine molding	1.75@2.00
Coarse molding	1.50@2.00
Brass molding	2.00
Ottawa, Ill.—Core, Steel Molding	2.00
Ottawa, Ill.—Sand blast sand	2.20@2.75
Ottawa, Ill.—Sawing sand	1.25@1.75

(Continued on page 46)

Wholesale Prices of Sand and Gravel

Prices given are per ton, F. O. B., at producing plant or nearest shipping point

Washed Sand and Gravel

City or shipping point	Fine Sand, 1/10 inch down	Sand, ¼ inch and less	Gravel, ½ inch and less	Gravel, 1 inch and less	Gravel, 1½ inch and less	Gravel, 2 inch and less
EASTERN:						
Ambridge and So. Heights, Pa.	.....	1.25	1.25	1.25	.80	.80
Boston, Mass. (wharves)	1.25	1.00	2.50	1.75	1.65	1.50
Buffalo, N. Y.	.80	.80	.75	.75	.75	.75
Buffalo, N. Y. (Niagara River)	.85	.80	.80	.75	.75	.75
Morristown, N. J.	.60	.60	1.20	1.00	1.00	1.00
North Wilbraham, Mass.	.....	.60*	2.00*	.....	1.25*	.....
Philadelphia, Pa.	.....	.95	.....	1.40	.....	1.25
Pittsburgh, Pa.	.....	1.25	.....	1.25	1.05	1.05
Shaw's Land'g, Meadville, Pa.	.....	1.00	.....	.....	.....	1.00
Washington, D. C.—Wharves	.75	.75	2.00	1.40	1.20	1.20
CENTRAL:						
Barton, Wis.	.75	.70	1.00	.70	.70	.70
Beloit, Wis.	.....	.60	.....	.....	.60	.....
Cherokee & Rock Valley, Ia.	.....	.40	.....	.....	.....	.90
Chicago, Ill.	1.35@1.45	1.35@1.45	1.35	1.35	1.35	1.35
Cincinnati (Miami Gr.)	.90	.85	.....	.....	.85	.....
Columbus, O.	.....	.65	.60	.70	.70	.65
Des Moines, Ia.	50@1.00	.50	1.50	1.50	1.25	1.25
Earlestead, Mich.	55@ .60	.55@ .60	.....	.75@ .90	.75@ .80	.75@ .80
Elgin, Ill.	.....	.30@ .40	All gravel, .30@ .40			
Escanaba, Wis.	.....	1.20	1.20	1.20	1.00	1.00
Fort Dodge, Ia.	.....	1.00	1.75	.....	1.75	.....
Grand Rapids, Mich.	.40	.45	1.00	.80	.70	.67
Greenbush, Lachine and Wing, Mich.	.....	.35	1.25	1.11	1.00	1.00
Hawarden & Doon, Ia.	.....	.50	.....	(1.20, Hawarden)		1.00
Illinois, Northern	.60	.60@ .70	.60@ .75	.60@ .70	.60	.50@ .60
Indianapolis, Ind.	.50	.50	.....	.65	.65	.65
Janesville, Wis.	.....	.50	.....	.....	.60	.....
LeMars, Ia.	.....	.60	.....	.....	.....	1.10
Mason City, Ia.	.60	.50	1.45	1.35	1.30	1.25
		Railway ballast and road work, .40				
Milwaukee, Wis.		1.20 for all sizes				
Minneapolis, Minn.	.40	.40	1.25	1.15	1.10	1.00
Moline, Ill.	.....	.60	1.00	1.00	1.00	1.00
Montezuma, Covington, Ind.	.75	.75	.85	.75	.75	.75
Oxford, Mich.	.....	.65	1.15	1.05	.95	.95
Summit Grove, Ind.	.75	.75	.75	.75	.75	.75
Terre Haute, Ind.	.75	.75	.....	.....	.75	.75
Toledo, O.		.60 for all sizes				
Wabash Valley District, Ind.		All sizes, .75.				
Waupaca, Wis.	.....	.35	.70	.70	.70	.70
Winona, Minn.	.....	.70	1.10	1.10	1.10	1.10
SOUTHERN:						
Charleston, W. Va. (River)	.....	1.20	1.30	1.30	1.30	1.30
Lake Weir, Fla.	.50	.....	.....	.....	.....	.....
Knoxville, Tenn.	.90	.90	.....	1.50	1.50	1.25
Pelzer, S. C.	.55	.....	.....	.....	.....	.....
Waco, Texas	.67	.67	.....	1.25	1.05	1.05
WESTERN:						
Kansas City, Mo.	.60	.60	.....	.....	.....	.....
Pueblo, Colo.	.80	.60	.....	1.50	.....	.....
St. Louis, Mo.	.....	1.20@1.25	1.50	1.30	1.30	1.25
San Francisco, Calif.	.....	1.15	1.15 for all grades gravel			
Seattle, Wash.	1.25*	1.25*	2.00*	1.25*	1.25*	1.25*
Sherman, Mo.	.65	.90	.90	.70	.70	.65

Bank Run Sand and Gravel

City or shipping point	Fine Sand, 1/10 inch down	Sand, ¼ inch and less	Gravel, ½ inch and less	Gravel, 1 inch and less	Gravel, 1½ inch and less	Gravel, 2 inch and less
EASTERN:						
Attica, N. Y.	.50	.50	.50	.60	.60	.60
Boonville, N. Y.	.40@ .55	.40@ .55	.....	.60	.....	.45@ .60
Burnside, Sand Pit, Conn.	All sand, .80 cu. yd.					
Pittsford, N. Y.	.....	.45@ .50	.45@ .50	.....	.....	.....
Yardville, N. J.	.....	.50@ .75	.....	.....	.....	.....
York, Pa.	.....	.80@1.10	(crushed rock)		.....	.....
CENTRAL:						
Beloit, Wis.	.....	.60	.....	.....	.60	.....
Covington, Ind.	.....	.....	.....	.....	.60	.60
Des Moines, Ia.	Washed concrete mix., 25% gravel, .70; 50% gravel, .90					
Earlestead, Mich.	.....	.....	.....	.65@ .80	.65@ .80	.65@ .80
Escanaba, Mich.	.85 for all sizes					
Grand Rapids, Mich.	.30	.....	.....	.....	.....	.40
Greenbush, Lachine and Wing, Mich.	.....	.50	.50	.50	.50	.50
Indianapolis, Ind.	Washed concrete mix, .55					
Janesville, Wis.	.....	.....	.....	.....	.55	.....
Moline, Ill.	.80	.....	.....	.....	.....	.....
Oxford, Mich.	.65*	.65*	.85*	1.40*	1.30*	1.30*
Summit Grove, Ind.	.50 for all sizes					
Terre Haute, Montezuma, Ind.	Road Gr., .50; Concrete, .60					
Toledo, Ohio	.....	.....	.....	.....	.....	.55@1.00
Wabash Valley District, Ind.	.75 for all sizes					
Waupaca, Wis.	.....	.....	.....	.....	.....	.40
Winona, Minn.	Pit run gravel under 2-in., .70					
SOUTHERN:						
Howcott, La. (50% and up in rock content)			.....	.....	.....	.65
Lindsay, Tex.	.....	1.15	.....	.....	.44@1.00	.....
Memphis, Tenn.	.65@ .90	.65@ .90	.....	.....	.85@1.10	.85@1.10
	Sand and gravel mixed for concrete, .85@1.10					
Waco, Texas	.....	.....	.....	(Road Gravel)		.38@ .48
Rosenberg, Tex.	1.35*	.50*@ .75*	.....	.....	.....	1.75*
Valde Rouge, La.	Sand Clay 50% metal on ¼" screen, .60 per ton					
WESTERN:						
Pueblo, Colo.	.60	River Run, .60 unscreened				
St. Louis, Mo.	.....	.....	.....	.....	.....	1.40
San Francisco, Calif.	.....	.75	.....	.....	.....	.....

* Cubic yard. B Bank. L Lake. || Ballast.

Washington Meeting of Builders, Labor and Material Men

WASHINGTON, D. C.—The stimulation of construction activity in Washington was the subject of a meeting of the Capital's builders and contractors held April 16 with representatives of the District government. As a result of the conference, a resolution was unanimously adopted authorizing the District Commissioners to appoint a committee representing labor, material men, contractors and builders to formulate a program and reach agreements that will remove reconstruction uncertainties and result in an immediate resumption of building.

The meeting was attended by more than 125 persons and consisted mainly of a discussion of the general building situation and the need of stabilizing the industry. The program suggested will call for specific agreements on the part of material men and contractors that prices will not be raised on any particular piece of work during a fixed period, while if there is a decline in prices the builder is to be given advantage of it, plus a fair but fixed and specific minimum profit.

Miscellaneous Sands per Ton at Plant

(Continued from preceding page)

Ottawa, Ill.—Roofing	1.75
Ottawa and Utica, Ill.—Furnace lin'g	.85@2.00
Molding, selected	1.50@2.50
Molding, coarse	.75@1.00
Thayers, Pa.—Core and traction	2.00
Wedron, Ill.—Molding	.75@1.00
Thayers, Pa.—Molding, fine	1.00@1.25
Molding, coarse, furnace lining	1.00
West Albany, N. Y.—Molding	1.50@2.00

Ground Gypsum Rock, per Ton, at Plant

Fort Dodge, Ia.	6.00
Garhutt, N. Y.	6.00
Grand Rapids, Mich.	6.00
Oakfield, N. Y.	6.00
Sandusky, O.	6.00

Jute sacks, $3.00 extra; paper, $1.00 extra.

Ground Rock Phosphate at Plant, per Ton

Centreville and Glover, Tenn.—B. P. L., 72% lump rock, ton, 2,240 lbs.	6.00@6.50
Centreville, Tenn.—B. P. L., 65% to 70%	7.00@10.00
Jacksonville (Fla.) District—Soft phosphate	10.00@12.00
(Add 2.50 for sacks)	
Mt. Pleasant, Tenn.	7.00@8.50
Mt. Pleasant, Tenn.—B. P. L., 70% washed (90% thru 100 mesh)	9.00
In 200 lb. burlap bags, 2.50 extra.	
Walls, Tenn.—B. P. L., 70%	7.50@7.75

Lime Association to Meet June 18-19

THE ANNUAL MEETING of the Lime Association is announced for June 18-19 at the William Penn Hotel, Pittsburgh. This is the same place set for the meeting in February, which was postponed. This is the first annual meeting of the new Lime Association. Its good work during the last year of strenuous business conditions deserves a 100 per cent attendance.

Government's Analysis of Building Market

CONTRACTS LET IN MARCH show conclusively that building and construction works are getting under way despite the talk of high prices. With the March record—it is better than the March record in any year since 1911, excepting 1917, when Government construction made the record abnormal—in mind, the results of a study of building and construction conditions made by the Division of Public Works and Construction Development in the United States Department of Labor takes on new significance. This study is based on 6,446 building and construction projects known to be contemplated at the signing of the armistice. The construction costs involved are $1,892,275,000.

Tabulation

Of the 6,446 projects 1,781 report high cost of materials, 1,330 report wages high, and 482 indicate labor shortage. Against the 1,781 reports of high cost of materials only 170 specifically state that the cost of materials is not high. Against the 1,330 reports of high wages only 301 state that wages are not high. On the other hand, 657 state there is no shortage of labor against the 482 reporting a shortage in the labor supply. Again, against 270 reporting a shortage of materials 834 say there is no lack of materials, although the prices are high, and many of those who had not decided to proceed with their construction work stated that they were holding off for a while, to see whether there was to be a drop in prices or if the higher level of prices was to remain.

The Vote on Price Levels

Of those who went into detail 359 gave brick as the principal item that was high; 328 said cement; 310 reported high prices for lumber; 242 said steel was high; and 138 indicated high cost of plumbing supplies. It should be borne in mind that most of these projects do not require steel in construction. This probably accounts for the comparatively few reports on the high prices for that material.

There were 155 reporting the cost of construction 20 per cent excessive, 154 said 30 per cent, 73 said 40, 91 put it at 50, 23 said 60, 17 said 70, 16 said 80, 9 said 90, 37 as high as 100, and 14 over 100, making the average excess in cost of construction approximately 55 per cent.

Government Clears Mineral Aggregate Industry

WASHINGTON—Vindication of the charges which have been made since the signing of the armistice that the stone and gravel industries were profiteering has been given by the Industrial Board of the Department of Commerce, which declared the present prices and conditions to be such as to need no changing.

The charge of profiteering has been made several times, once in particular being at the conference here of the governors of states and mayors of cities early in March, when the governor of Ohio characterized the prices then prevailing for road materials as far too high.

The Department of Commerce Industrial Board was formed by Secretary of Commerce Redfield to hold meetings with the representatives of the industry for the purpose of determining prices at which the various Government departments would be willing to make purchases, with the idea that the public announcement of these prices, followed by an announcement from the industry that it was prepared to take orders from private individuals at practically the same prices, would tend to encourage buying and building.

The declaration that no change in prices or conditions in the building materials industry could be recommended (see ROCK PRODUCTS, April 12, p. 44) was the first statement to be made regarding the results in industries other than steel.

The board still has before it the results of the meeting with other industries allied to the numeral aggregate industry, and will probably make announcements regarding prices in other commodities in the near future.

Crushed Slag Wholesale at Plant Per Ton

City or shipping point	Roofing	Screenings, ¼ inch down	½ inch and less	¾ inch and less	1½ inch and less	2½ inch and less	3 inch and larger
EASTERN:				Other sizes, .85@1.45			
Buffalo, N. Y.	1.45						
E. Canaan, Conn.	3.00	1.00	3.00	1.15	1.10	1.05	1.00
Ensley, Ala.	2.05	.90		.90@1.20	1.00	.90	.85
Philadelphia Dist.	2.00@2.50	.75	1.50	.85	.85	.85	.85
Pittsburgh Dist.	2.00@2.50	1.00	1.50	1.00	1.00	1.00	1.00
Sharpsville, Pa.	1.75	1.00	1.25	1.00	1.00	1.00	1.00
WESTERN:							
Chicago, Ill.			All sizes, $1.50, F. O. B. Chicago				
Detroit, Mich.			All sizes, 1.65, F. O. B. Detroit				
Toledo, O.			All sizes, 2.00, F. O. B. Toledo				
Youngstown, Dover, Hubbard, Leetonia, and other Ohio points	1.75	1.00	1.25	1.00	1.00	1.00	1.00

General News From the Rock Products Markets

U. S. Government Will Spend $305,369,464 on Public Construction Work

WASHINGTON, D. C.—Despite the failure of the last Congress to pass important appropriation measures, the Federal Government is getting under way a vast amount of building and construction work. The Department of Labor states that by the end of the fiscal year 1921 there will be available for Federal aid for State road building more than $266,000,000. Congress passed the appropriation for $9,050,000 for new hospitals and improvements to old ones needed by the Public Health Service and this building activity will be under way by the end of the year. Some of these projects will be under construction by midsummer. More than $30,000,000 are involved in the rivers and harbors appropriation bill.

The harbors and rivers improvement work takes in almost every section of the country, much of it being planned for the southeast, the Atlantic Coast and the Pacific States. More than a million dollars will be spent along the Mississippi River, approximately $3,500,000 on the Ohio River, and about $500,000 along the Missouri River. This work, it is understood, will go ahead regardless of current material and labor costs.

The hospital project in Cook County, Illinois, most of which is completed, carries an appropriation of $3,000,000.

There is an appropriation of $1,500,000 for a sanatorium at Dawson Springs, Ky., for the site and hospital plant at Norfolk, Virginia, $900,000 has been appropriated, for the hospital in the District of Columbia, $550,000, and for the Marine Hospital at Stapleton, Staten Island, N. Y., $190,000.

Hines' Authority to Fix Rail Rate Denied in Dakota

AUTHORITY OF THE DIRECTOR GENERAL of railroads to fix freight and passenger rates is to be determined by the Supreme Court. Appeals have been filed by the government from the North Dakota Supreme Court decrees enjoining the Northern Pacific railway and other lines in that state from charging increased rates and ordering them, along with the director general, to show cause why the injunction should not be made permanent. With the filling of the case attorneys for the railroad administration announced that motions would be made to have the court agree to hear arguments at this term in the hope that a decision could be rendered before summer.

Agitates Reductions in Freight on Road Machinery

ACCORDING TO THE Washington correspondent of ROCK PRODUCTS efforts are to be made to have road-making machinery included in the reduced freight classifications, and an attempt will also be made to induce the Railroad Administration to make the 10 cents per ton reduction general so as to benefit private contractors as well as Government agencies in the construction of public works. It is desired that both road and building materials be included in the reduced freight classification, it being pointed out that the Government agencies are doing everything in their power to induce a resumption of construction work by private builders, and that a reduction in freight rates would be one of the most potent arguments which could be brought to bear.

National Federation of the Building Industries May Call Big Conference

ERNEST T. TRIGG of Philadelphia, President of the National Federation of Construction Industries, announced recently that the Board of Directors of the Federation is considering calling a National Conference of representatives concerned with the Construction Industry, consisting of manufacturers, distributors, consumers, labor, agriculture, transportation and finance. The manufacturers would include representatives from the 128 different crafts, or one-third of the industries of the United States, directly or indirectly producing construction materials. The distributors would include representatives of wholesale and retail interests, contractors, architects and engineers, supply houses, jobbing houses, builders exchanges and others. The consumers would include representatives from 134 Granges; 24 Farmers' National Headquarters; 29 National Farmers' Organizations; 221 state agricultural associations; national and state real estate associations; Federal and State Highway Commissioners, Building Commissioners and all other organizations of consumers which are interested in construction. Organized labor would include representatives from both national and state organizations. Finance would include representatives of trust companies, building and loan associations, bond companies and other banking institutions concerned with construction. Transportation would include representatives of the U. S. Railway Business Men's Association, and of individual steam and electric roads.

Rock Products Industry Still Far Below Normal

WASHINGTON, D. C.—Statistics prepared by the National Association of Manufacturers from replies received from some 4,400 large firms engaged in practically every line of industry, in response to queries as to trade conditions, show that with the exception of five out of 22 principal groups of industries throughout the United States, business activity is approximately between 25 and 50 per cent of normal.

Conditions in the cement and allied industries average considerably below 50 per cent, 67 per cent of the replies showing business to be poor, 25 per cent reporting it fair and only eight per cent considering it good. The outlook for 1919, however, is slightly better, 10 per cent of those replying considering trade prospects for the year excellent, 27 per cent considering them good, 48 per cent reporting them fair and only 15 per cent believing them to be poor.

The association also requested from its members opinions showing what is needed to promote National prosperity, from which the following are cited:

Alpha Portland Cement Co., Easton, Pa.: The Government should immediately discontinue all of the various war time committees, boards, etc., and allow the citizens of this country to attend to business matters.

Ohio Quarries Co., Cleveland: We need a quick resumption of public Improvements by the United States Government, States, cities, counties, etc., and a setting of prices on all commodities for the balance of 1919.

Pennsylvania Starting Up Highway Work

IN THE WEEK ended April 12 Pennsylvania State highway officials awarded road-building contracts totaling $2,034,378, according to messages to the Bureau of Public Roads, United States Department of Agriculture, which administers the Federal aid road act. This figure is believed to represent the greatest amount of road work formally contracted for in one week by any State, and is regarded as an indication of the force that will be put behind highway construction now that Americans are turning from the world war to resume the interior development of this country. Of the Pennsylvania contracts mentioned, the Federal Government, under the Federal aid road act, is to pay $911,407. A bond issue of $50,000,000 for road building was recently authorized in Pennsylvania.

Passed By The Screens

Incorporations

Independent Granite Co., St. Cloud, Minn. Capital, $50,000.

Hazelton Stone and Sand Co., Youngstown, O., $50,000, W. M. Keesucker. Is operating.

The "Ill. Mo." Mineral Products Co., Chicago. Capital stock increased from $25,000 to $35,000.

The Davis Slate & Mfg. Co., of Canada, Ltd., has been incorporated with a capital of $5,000. Head office is located at Toronto.

Illinois Gypsum Company, Wilmington, Del. Capital, $125,000. To mine for and produce gypsum, etc. T. L. Croteau, P. B. Drew, M. M. Ciancy, local Wilmington, Del.

Brunner Mond Canada, Limited, which has been federally incorporated with a capital of $5,000,000 has also taken out an Ontario license. The head office and works are at Amherstburg, Ont.

J. Donahue & Sons Co., Milwaukee, Wis. Capital, $30,000. John H. Donahue, Frank P. Donahue, Nell Donahue Esser. General paving and contracting business. Own and operate a gravel pit.

Kirkpatrick Gravel Co., Greenfield, Ind. Capital, $15,000. To procure, sell and deliver gravel, sand, etc. Directors: C. M. Kirkpatrick, A. S. Kirkpatrick, Homer L. Smith, F. G. Banker, W. R. McKown.

Imperial Sand and Gravel Co., El Centro, Cal. Capital, $25,000. Directors: Chas. M. Appelstill, Harry L. Barker, E. S. Lack, all of El Centro. Articles filed by Clarence B. Conlin, 628 California Bldg., Los Angeles.

The following companies have been registered in Quebec City-La Compagnie des Products de Cement du Canada Ry., manufacturers of stone and building materials; Cement Products of Canada, manufacturers of artificial stone and building materials.

Lime

Arnold, Inman & Reigle Lime Co. has contracted for farms at Luckey, O., and expects to incorporate for $500,000 for the purpose of erecting modern electrical lime plants.

The Lime & Stone Products Corporation, formerly the Vanderhoof Lime Co., at Hamburg, N. J., has resumed operations. Lester M. Drew, who was assistant to the former superintendent, the late Harry Vanderhoof, is now in charge at the lime kilns. The company is making extensive improvements at the kilns as at the quarries. H. A. Shaper is manager at the quarries.

The Portland Cement Co., Santa Cruz., N. Mex., has informed the Shipping Board that it has been experimenting for two years on the manufacture of potassium sulphate from its flue gases, and has had in successful operation for over six months, a complete installation of six kilns. This company contemplates improvements and additions to its installation, but feels that it cannot go ahead unless assured of protection from competition with European potash.

The first of a series of safety and welfare meetings of the Bureau of Accident Prevention and Insurance of the Portland Cement Association was held in Bethlehem, Pa., March 27. All the companies in the Lehigh district were represented, 70 persons being present. It is planned to hold similar meetings in various districts of the country. They are held under the direction of H. G. Jacobsen, manager of the department. The program discloses how interesting and valuable the first meeting was. Mr. Jacobsen talked about accident prevention and welfare work at cement plants, and illustrated his remarks with slides. Dr. George E. Tucker, who had made a special study of the effect of cement dust on the health of employes discussed that subject. Dr. Walter O. Snelling talked on the safe application of explosives in quarries. S. N. Fowler explained and demonstrated the treatment for burns and wounds by Ambrine, a development of the war. Moving pictures of blasting and other operations at the Riverside Portland Cement Co. plant, Riverside, Calif., were shown.

Quarries

The Blue Ridge Stone Co. is constructing a plant near Charmian, Pa.

D. I. Snell has purchased the stone quarry east of Canajoharie, N. Y., of Fred Minster and will get out crushed stone for the Aberthaw Construction Co.

The Laubis Stone Co., recently organized at Kenton, O., has taken over the Laubis quarry in Marion. The concern already has started work and will open an office in Hepburn.

The Central Illinois Public Service Co., at Anna, Ill., has been preparing its quarry for operation. Machinery is being overhauled and new machinery is being installed, according to the local papers.

The Fultonham Stone Co., south of White Cottage, Ohio, passed into the possession of the Columbia Chemical Co. of Barberton and Pittsburgh, two weeks ago. Within 30 days electrical machines will be installed, giving the plant a capacity of 30 cars of stone a day. The company recently purchased several farms in the vicinity.

Almost entire town of Casparis, in the mountains near Connellsville, Pa., was wiped out by fire three weeks ago, the few remaining buildings being saved by wrecking others in the path of flames with dynamite. Fire originated from oil in one of the stone crusher buildings and quickly spread to the dwelling houses of men employed by the Casparis Stone Co. Three largest buildings at the plant are a total loss, as also are many dwellings. The loss is estimated at $100,000.

The International Pulp Stone Co. has taken an option on a two-acre tract of land near Tunnel Mill, Jefferson county, O., to be opened as a quarry early in the summer. A forty-foot vein of free sandstone rock suitable for manufacture into grinding stones underlies the tract. The concern operates a quarry on Chestnut street, East Liverpool, O. Rock in five-foot blocks are mined from the quarries and later modeled into round stones used in grinding wood pulp for manufacture of paper.

Potash

James P. Forsythe has disposed of his interest in the Marshfield (Wis.) Potash Co. to Edward C. Krause who now becomes a partner of Wallace Kitchen in the business.

The Lehigh Portland Cement Co., Allentown, Pa., has had its charter amended to permit the manufacture of potash for fertilizer, from cement dust, according to a newspaper report.

The C. F. Burgess laboratories of Madison, Wis., claim to have developed a strictly American process for producing a high-grade caustic potash from American raw materials. This material was imported before the war, among the many chemical products obtained exclusively from Germany. It was received in the form of pure white sticks, having a content of 85 per cent or more of KOH, anl was designated as of U. S. P. quality. The raw materials employed are crude caustic from wood ashes, and alunite. While the tonnage demand for the product is small, it has important applications in laboratory practice, especially gas analyses, and in various pharmaceutical and chemical preparations, including shaving soap.

Gypsum Products

The annual report of the United States Gypsum company for the year ended Dec. 31, 1918, shows earnings of 7.33 per cent on the common stock, as compared with 9.23 per cent for 1916 and 7.185 per cent for 1917.

At the American Gypsum Co. mills, Port Clinton, O., the working hours have been increased from eight and a half to nine and a half, and the company is planning on taking on a large number of men. The demand for building materials has shown an increase for several weeks.

Manufacturers

Sullivan Machinery Co., Chicago, Ill., in its house organ, Mine & Quarry, notes the establishment by the corporation of a foreign trade department. In this connection it is noted the Sullivan company has well established branch offices with their own organizations at London, Salisbury House; at Paris, 18 Ave. Parmentier; at Santiago, Chile, Casilla No. 27; and at Sydney N. S. W., Australasia Chambers, Martin Place. Engineering agencies of established standing handle Sullivan products in Christiania, Amsterdam, Gijon, Spain, Turin, Italy, Algiers, Tunis, Johannesburg and Durban, Shanghai and Tokyo, Lima and Buenos Aires.

Hendrick Manufacturing Co., Carbondale, Pa., have issued a copyright book on "Perforated Metals," giving a vast fund of information on screen plates and perforations. Page upon page of reproductions of the exact sizes of all kinds of perforations are printed with dimensions. Then there are tables of round, square, stagger, straight, diagonal and other perforations, giving sizes, centers, gauges, widths, etc. Other tables give the thickness and weight of sheet metal and with other tables and information help out in the mathematical calculations for screen installations. Corrugated, double corrugated, crimped, flanged, shaking, revolving and cylindrical screens are also pictured and described. It is a valuable book for those interested in this kind of equipment, and may be had for the asking.

Personals

John W. Campbell, "the mountain hermit lime burner," proprietor of the Tazewell White Lime works, North Tazewell, Va., has retired at the age of 73. He is succeeded by Shuler & Williams. This plant specializes in agricultural lime.

A. Bruce Bielaski, former Chief of the Bureau of Investigation of the Department of Justice, has been elected Vice President of Richmond Levering & Co., Inc., oil engineers and operators. He will represent that corporation as Director of the Eastern Potash Corporation, and other enterprises which the Levering concern operates or controls.

S. Roland Hall, advertising manager of the Alpha Portland Cement Co., Easton, Pa., has made a new arrangement whereby he still retains his relations with the company but on a different basis and will develop himself "as a sort of specialized agency man," confining himself to certain types of work. He will continue to serve Barrows & Richardson, Philadelphia, as advertising manager and will not only give the usual agency service but will continue to edit Alpha Aids.

OBITUARY

Richard H. Hughes, 55 years old, vice president of the Crescent Portland Cement Co. of Wantum, Pa., whose home was in Pittsburg, died suddenly April 12, at the Pennsylvania station, N. Y. Mr. Hughes had been in New York on business.

Sand and Gravel

Central Park Construction Co., 521 Ashton Bldg., Rockford, Ill., (a Delaware corporation) have registered a change of name to Beloit Sand & Gravel Co., in Wisconsin. Office, 503 Eastern Ave., Janesville, Wis. Sand, gravel, stone, construction materials of all kinds.

O. S. Scott of Newton, Ill., is said to have contracted with Chicago people for the development of his novaculite gravel deposits in Alexandria county, Illinois. An investment of from $75,000 to $100,000 in a plant will be made. The holdings are estimated at 1,000,000 car loads.

Producers Material Co., Room 824-29 S. La Salle St., Chicago, Ill., has registered in Wisconsin. W. D. Thompson, 526 Main St., Racine, Wis., representative. Stock, $750,000, Wisconsin share, $200,000. Stone quarries, crusher plants, lime and building materials, fabricating stone, etc.